

A HISTORY OF
GREEK PHILOSOPHY

VOLUME VI

A HISTORY OF GREEK PHILOSOPHY

BY
W. K. C. GUTHRIE

VOLUME VI
ARISTOTLE
AN ENCOUNTER



CAMBRIDGE UNIVERSITY PRESS
CAMBRIDGE
LONDON NEW YORK NEW ROCHELLE
MELBOURNE SYDNEY

Published by the Press Syndicate of the University of Cambridge
The Pitt Building, Trumpington Street, Cambridge CB2 1RP
32 East 57th Street, New York, NY 10022, USA
296 Beaconsfield Parade, Middle Park, Melbourne 3206, Australia

© Cambridge University Press 1981

First published 1981

Printed in Great Britain at the Alden Press, Oxford

British Library Cataloguing in Publication Data

Guthrie, William Keith Chambers

A history of Greek philosophy

Vol. VI Aristotle

1. Philosophy, Ancient -- History

1. Title

180 B171 62-52735

ISBN 0 521 23573 1

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The device on the front cover is a head of Aristotle from the Kunsthistorische Museum, Vienna (the gift of Archbishop V. E. Milde, 1846)

PREFACE

Aristotle that hath an oare in every water, and medleth with all things.

Montaigne tr. Florio

I have chosen the sub-title of this volume for two main reasons. First, it is not an encyclopaedic 'enquire within' for any information about Aristotle. For one thing, much of his original contribution to philosophy took the form of criticism of his predecessors, and so his name will be found frequently in the indexes to previous volumes; for example his thoughts on plurality and continuity, still of great value, occur largely in his criticism of the Eleatics Parmenides, Zeno and Melissus, and so belong to vol. II, in which his name figures largely; his views on infinity as potentially but not actually possible in his criticism of Democritus in *Phys.* 3, the difference between infinite in divisibility and infinite in extent in his remarks on Zeno, both in vol. II, and his views on induction and definition, fully treated here in vol. VI, find more than a mention in his discussion of the contribution of Socrates (vol. III, 426ff. = *Socr.*, 106ff.), and *Rhet.* I.10 and I.15 will also be found in vol. III (pp. 123ff.). Secondly, on re-reading what I have written I find it intensely personal. I have always admired Aristotle as a thinker and particularly as a pupil and critic of Plato. To me he is, as my first pages make clear, both the last of the ancient and the first of the modern philosophers. The Hellenistic Age which followed, also known, significantly, as the post-Aristotelian, did not produce another Aristotle, and represents, philosophically speaking, a falling-off from him. I hope that this personal outlook does not seem too misplaced in what purports to be a history, but as I may have said in a previous preface, any history of philosophy is bound to be to some extent personal. Although I would not endorse everything of Harold Laski's, I am with him when he says, 'I am pretty sure that every philosophy is really no more than the brilliant hypostatization of an individual temperament.'

Preface

Moreover, such an encyclopaedic work has been supplied by Professor Düring, with his *Aristoteles*. Professor Düring is as fluent in German as he is in English or his native Swedish. He is, besides, an eminently fair-minded man, and after he had given us *Aristotle in the Ancient Biographical Tradition* and his edition of the fragments of the *Protrepticus* in English it was obviously the turn of the Germans, in whose language, unfortunately for readers of English only, *Aristoteles* appeared. In the body of a work such as the present, one tends to mention a book only to argue with it, so I take this opportunity of expressing the great debt which I owe to this work, especially in leading me to passages in Aristotle which I might otherwise have overlooked. To quote Marrou's review: 'To have planned a work on this scale was a daring ambition, to have brought it to a successful completion is a magnificent and heroic achievement.' Nevertheless, as G. E. R. Lloyd has also said in a review, 'this is not an easy book to read or use, and it is hardly one to recommend to beginners'. In particular, the lack of an adequate and comprehensive index is to be regretted.

This reminds me that a reviewer of an earlier volume in the present series feared that it may have fallen between two stools, being too learned for the beginner and too elementary for the expert. This cheered me, for it meant that I was probably hitting the target primarily aimed at, namely the student, who is surely half-way between the two. Although I would be the last to defend the breadth of my reading in modern philosophy, this also accounts for my quoting other philosophers, 'even Descartes' as another reviewer complained, from general introductions to philosophy such as are likely to be in a student's library. Another class which, to judge from my correspondence, has appreciated the work has been that of colleagues in related, but different, especially literary, disciplines. But I must not fall into the trap, which lies baited for writers of multi-volume works, of reviewing my reviewers; they have in any case been all too kind.

It will be assumed in what follows that the bulk of the writings which have come down to us as Aristotle's are genuinely Aristotelian. For the extreme views on either side see those of P. Gohlke and J. Zürcher (summarized by P. Moraux in *Aristoteles in der neueren Forschung*, 69f.). Zürcher's mountain of proof falls like a house of

Preface

cards, says Moraux. He has been followed now by F. Grayeff (see the Bibliography).

Translations, from both ancient and modern authors, are my own unless otherwise stated. I hope it is excusable to put translated quotations from foreign authors between quote-marks.

To end on a still more personal note, I suffered a stroke in the summer of 1979. My work on volume VI was by that time virtually complete but I have been unable to give the *Politics* and the *Poetics* the treatment I would have hoped to had I been well. The appearance of any further volumes has been made impossible. That will be a pity, as I had hoped to link up with the Neoplatonists and the beginnings of Medieval and Christian philosophy. It is, however, of lesser importance both for the reason I have given and because that period has recently received considerable attention from English-language scholars.

This volume naturally owes more than the others to other people. My thanks are due in the first place to Cambridge University Press for publishing this book and its predecessors. Proofs have been read by Mrs Ann Buttrey and the bibliography and index compiled by Mrs Catherine Osborne. Dr G. E. R. Lloyd has read several chapters of the book in typescript and has made useful suggestions. Thanks are also owed to my wife, who has given me throughout 'supportive background' and whose knowledge of Greek has proved invaluable, and to Miss B. M. Gorse, who as before has done my typing and has shown herself as much an old friend to us both as a typist.

CAMBRIDGE
DECEMBER 1980

W.K.C.G.

LIST OF ABBREVIATIONS

Most works cited in abbreviated form in the text will be easily recognizable under the author's or editor's name in the bibliography. It may be however helpful to list the following:

ARISTOTLE'S WORKS

<i>An. Post.</i>	<i>Posterior Analytics</i>
<i>An. Pr.</i>	<i>Prior Analytics</i>
<i>Ath. Resp.</i>	<i>Constitution of Athens</i>
<i>Cael.</i>	<i>De caelo</i>
<i>Catt.</i>	<i>Categories</i>
<i>De an.</i>	<i>De anima</i>
<i>De int.</i>	<i>De interpretatione</i>
<i>De phil.</i>	<i>De philosophia</i>
<i>De resp.</i>	<i>De respiratione</i>
<i>Div. per somn.</i>	<i>De divinatione per somnum</i>
<i>EN</i>	<i>Nicomachean Ethics</i>
<i>Eud.</i>	<i>Eudemus</i>
<i>GA</i>	<i>De generatione animalium</i>
<i>GC</i>	<i>De generatione et corruptione</i>
<i>HA</i>	<i>Historia animalium</i>
<i>IA</i>	<i>De incessu animalium</i>
<i>Insomn.</i>	<i>De insomniis</i>
<i>Iuv.</i>	<i>De iuventute</i>
<i>MA</i>	<i>De motu animalium</i>
<i>MM</i>	<i>Magna Moralia</i>
<i>Mem.</i>	<i>De memoria</i>
<i>Met.</i>	<i>Metaphysics</i>
<i>Meteor.</i>	<i>Meteorologica</i>
<i>PA</i>	<i>De parvibus animalium</i>

Abbreviations

<i>Phys.</i>	<i>Physics</i>
<i>Poet.</i>	<i>Poetics</i>
<i>Pol.</i>	<i>Politics</i>
<i>Protr.</i>	<i>Protrepticus</i>
<i>Rhet.</i>	<i>Rhetoric</i>
<i>SE</i>	<i>Sophistici Elenchi</i>
<i>Somn.</i>	<i>De somno et vigilia</i>
<i>Top.</i>	<i>Topics</i>

PERIODICALS

<i>AGPh</i>	<i>Archiv für Geschichte der Philosophie</i>
<i>AJP</i>	<i>American Journal of Philology</i>
<i>CP</i>	<i>Classical Philology</i>
<i>CQ</i>	<i>Classical Quarterly</i>
<i>CR</i>	<i>Classical Review</i>
<i>IPQ</i>	<i>International Philosophical Quarterly</i>
<i>JHI</i>	<i>Journal of the History of Ideas</i>
<i>JHP</i>	<i>Journal of the History of Philosophy</i>
<i>JHS</i>	<i>Journal of Hellenic Studies</i>
<i>PAS</i>	<i>Proceedings of the Aristotelian Society</i>
<i>PCPS</i>	<i>Proceedings of the Cambridge Philological Society</i>
<i>PR</i>	<i>Philosophical Review</i>
<i>Philol.</i>	<i>Philologus</i>
<i>Phron.</i>	<i>Phronesis</i>
<i>PQ</i>	<i>Philosophical Quarterly</i>
<i>TAPA</i>	<i>Transactions of the American Philological Association</i>
<i>YCS</i>	<i>Yale Classical Studies</i>

OTHER WORKS

(Full particulars are in the bibliography)

<i>AABT</i>	I. Düring, <i>Aristotle in the Ancient Biographical Tradition</i>
<i>ACPA</i>	H. Cherniss, <i>Aristotle's Criticism of Plato and the Academy</i>

Abbreviations

DK	Diels-Kranz, <i>Die Fragmenter der Vorsokratiker</i>
D.L.	Diogenes Laërtius
RE	<i>Realencyclopädie der classischen Altertumswissenschaft</i> , ed. Wissowa, Kroll et al.
Symp. Ar. I	<i>Aristotle and Plato in the mid-fourth century</i> . Proceedings of the first Symposium Aristotelicum
Symp. Ar. II	<i>Aristote et les problèmes de méthode</i> . Proceedings of the second Symposium Aristotelicum
Symp. Ar. III	<i>Aristotle on Dialectic</i> . Proceedings of the third Symposium Aristotelicum
Symp. Ar. VII	<i>Aristotle on mind and the senses</i> . Proceedings of the Seventh Symposium Aristotelicum

OBITER DICTA

ένος ἀτόπου δοθέντος τᾶλλα συμβαίνει. τοῦτο δ'οὐδέν χαλεπόν.

Phys. 1, 185a11

One absurdity having been granted, the rest follows. Nothing difficult about that.

διὸ καὶ ὁ φιλόμυθος φιλόσοφος πῶς ἐστι. ὁ γὰρ μῦθος συγκεῖται ἐκ θαυμασίων.

Met. A, 982b18

Therefore even the lover of myth is in a sense a philosopher; for myth is composed of wonders.

ἀνάγκη δὴ στῆναι.

Met. Λ, 1070a4

One must stop somewhere.

Τὸ διορίζειν γὰρ οὐκ ἔστι τῶν πολλῶν.

EN 1172b3

To make clear distinctions is not characteristic of most men.

ἂ γὰρ δεῖ μαθόντας ποιεῖν, ταῦτα ποιοῦντες μαθάνομεν.

EN 1103a32-34 and *Met* Θ, 1049b29-32

What we must learn before we can do, we learn by doing.

σχέδον δ'οἱ πλείστοι φαῦλοι κριταὶ πρὸς τῶν οἰκείων.

Pol. 3, 1280a15

Most men are bad judges in their own case.

πᾶν γὰρ ἄσαφές τὸ κατὰ μεταφορὰν λεγόμενον.

Top. 139b34

Everything said metaphorically is unclear.

δεῖ μεμνησθαι ἀνθρώπου ὄντα οὐ μόνον τὸν εὐτυχοῦντα ἀλλὰ καὶ τὸν ἀποδεικνύντα.

Vita M. (*AABT*, 103f., from *On the Good*)

To remember that one is but a man befits not only the fortunate but also the logician.

DISCOVERING ARISTOTLE

I will tell you, if you are willing, of my own
experiences in the matter.

Socrates in the *Phaedo* (95 e)

(1) *Two encounters*

I still remember my first serious introduction to Aristotle. Plato I had met in my schooldays. I read the *Phaedo* at the impressionable age of seventeen (probably the age at which Aristotle first read it), and could not (as I scarcely can now) repeat the final sentences of either that or the *Apology* without a catch in the voice. This, I felt, was what philosophy should be: grounded in tough argument but borne up on the wings of Reason itself to the realm of pure Being, where the mind 'itself by itself', freed from reliance on the untrustworthy mediation of the senses, enjoys direct communion with the eternal, unchangeable realities. The culmination of searching dialectic in the symbolic truths of poetry and myth, the dramatic skill and the beauty of the language, together made an irresistible appeal.

In comparison with this, Aristotle represented the unknown and, one suspected, the hostile and unsympathetic, 'the foal that kicks its mother', as Plato is reported (improbably) to have called him.¹ The scholastic tradition still cast its spell on anything I had read about him. Aristotle was simply the unchallengeable, scarcely human, authority, Dante's 'Master of those that know'. The Arabs called their greatest philosopher 'The Second Master'. It did not need to be said that the first was Aristotle. For Christian and Moslem alike Aristotelianism was a fixed and rigid scheme of ideas, a closed system, worlds away from the

¹ D.L. 5.2. Alternatively he nicknamed him 'Horse' because he was like a horse that *bites* its own father. (See Düring, *AABT*, 320 t. 37b.) One can take one's choice. On the unfavourable traditions about A.'s relations with P., see Düring, *AABT*, 256f., de Vogel, *Philos.* 1, 301-3.

Discovering Aristotle

tentative probing of the Socratic method; and from this there had grown up a corresponding idea of the mind of Aristotle himself as coldly self-consistent, aloof and uncompromising towards all others, teaching moreover a metaphysics and cosmology that had little or no interest for the world of today.

Two things served to banish this distasteful impression. First, a reading of Aristotle's own works. As an undergraduate I started with the first book of the *Metaphysics*, and read on with increasing excitement. Part of the attraction of earlier Greek thought had lain, it must be admitted, in a certain remoteness and mystery. Reading the remains of the Presocratics, and in part the works of Plato himself, one enjoyed the attempt to penetrate their strange ways of thinking, but strange in many respects their mentalities remained. There was a temptation to regard this as something typically Greek, for after all it was natural enough that a kind of curtain should divide us from a people who lived more than two thousand years ago and thought in a different language with a structure sufficiently alien to affect that of the concepts which it expressed. Yet here was Aristotle, an Ionian Greek like the Milesians and Democritus and not far removed from them in time, a pupil and friend of Plato's, puzzled by their strange expressions in much the same way as we are ourselves. If there was a curtain between us and them, he was definitely on our side of it. 'When the Pythagoreans construct physical bodies out of number – things which have lightness and weight out of what has neither – they appear to be talking about a different universe and other bodies, not those which we perceive.' With Empedocles, 'one must get away from his primitive expression to the thought that lies behind it'. Similarly with Anaxagoras: 'If one were to follow him out by analysing what he had to say . . .'; 'he speaks neither rightly nor clearly, but what he means is something like what his successors say and corresponds more nearly to phenomena as we now see them.' These early thinkers were 'like untrained boxers, who may get in some shrewd blows, but there is no science behind them'.¹

¹ *Met.* 1090 a 32, 985 a 4, 989 b 4 and 19, 985 a 13. He has been much blamed for remarks like this, on the assumption that under the pretence of discovering his predecessors' 'real meaning' he is in fact distorting what they said to fit it into his own philosophical framework. We cannot go into this here, but see my article 'A. as a Historian of Philosophy' in *JHS* 1957.

Two encounters

Here at last was a Greek who reflected my own thoughts in plain and comprehensible terms, a mind that worked on the same lines and bridged the gap of millennia between us, though it might be truer to say that it is we who have learned to think in Aristotle's way. After all, he laid down the rules of logical thinking that guided European thought till the nineteenth century, and if professional logicians have in the last hundred years gone beyond him, the thinking of the ordinary man, whether he realizes it or not, is still conducted mainly within an Aristotelian framework. In any case the personal discovery of this affinity was a stimulating and enlightening experience. In spite of my admiration for Sir Karl Popper, I hope I shall succeed in proving him wrong when he accuses Aristotle of making Platonism dull, and acquiesces in Zeller's judgement that 'he cannot inspire us . . . at all in the same way as Plato does. His work is drier, more professional . . . than Plato's has been' (*O.S.* II, 271 note). Poor Aristotle – and with all his dialogues lost too!

The second aid towards my discovery of Aristotle was Werner Jaeger's epoch-making book, 'Aristotle: towards a History of his Development'.¹ The subtitle of the English editions, 'Fundamentals of the History of his Development', is a little misleading, suggesting as it does a kind of textbook exposition of the accepted groundwork of a subject ('Fundamentals of Physics' or whatever), whereas Jaeger's more modest aim was to lay foundations (as Case translated it in *Mind* 1925) on which others could build. The new title tends to obscure the most attractive features of the work: its freshness of approach and pioneer character,² and the tentativeness of its conclusions. If the

¹ *Aristoteles: Grundlegung einer Geschichte seiner Entwicklung*, Berlin 1923; English trans. by R. Robinson, 2nd ed., Oxford 1948.

² If, as some scholars like to remind us (e.g. A. Mansion in *Rev. Neoscol. de Phil.* 1927, German trans. in *A. in der neu. Forsch.* 1968, where see p. 9 on Zeller), development-theory has its roots in the last century, its first flowering must be credited to Jaeger's *Aristoteles* and its predecessor of 1912, his *Entstehungsgesch. d. Metaph. des A.*, though patriotic Britons remember also the account of Thomas Case in the comparative obscurity of his article on Aristotle in the *Encyclopaedia Britannica* of 1910. (See Ross's much-reprinted lecture from *Proc. Brit. Ac.* 1957, 63f., and Case's own *apologia* in *Mind* 1925, 80–6.) Compare too Grant's *Ethics* I, 71 n. 35, on the chronological sequence of some of the extant writings, an order based on 'comparison of the thought in different books and the various degrees of maturity exhibited by the same conception occurring in different books', also pp. 272–7 of the same volume. E. Berti's *La filosofia del primo Aristotele* is a mine of information on the history of the development problem, both before and after Jaeger.

Discovering Aristotle

following half-century has seen a steady stream of criticism as well as appreciation, in the course of which some of Jaeger's conclusions have been considerably modified, this is what he expected and intended to happen. His achievement was to infuse new life into Aristotelian studies and set them off on a new track. Whether in agreement with him or not, their dominant theme in the post-Jaeger period has been the extent to which his philosophy did or did not change and develop during his working life. Returning now to Jaeger after many years, having in the meantime read many of his critics, I feel no doubt that the *Grundlegung*, the foundations, remain.

(1) *The genetic approach*¹

For all this reaction towards the standpoint of common sense and empirical fact, Aristotle could never cease to be a Platonist. His thought, no less than Plato's, is governed by the idea of aspiration, inherited by his master from Socrates – the idea that the true cause or explanation of things is to be sought, not in the beginning, but in the end.

F. M. Cornford

Now for a statement of policy. The details of development-theory are sometimes obscure, and some important, even fundamental points are still a matter of doubt and controversy. In view of this, and of the evidence that from the time when he abandoned belief in the transcendent Forms of Plato, Aristotle's philosophy underwent no revolutionary changes, it will not be advisable to allow arguments about development to predominate in a general survey like the present. Here and there, no doubt, they will throw light on a particular question, but to make the whole approach a genetic one might involve us in a welter of controversial detail and be the reverse of helpful towards an under-

¹ It seems superficial to play down the achievements of development theory on the *a priori* ground that they are simply a manifestation of the *Zeitgeist* of the 19th and early 20th centuries, influenced in particular by the evolutionary biology of men like Darwin and Wallace but traceable further back to Herder, Goethe and the Romantic movement. So Dirlmeier in *A. in der neu. Forsch.*, 144. Cf. rather Tarán on a book by Oehler (*Gnomon* 1974, 538): 'It is not clear, moreover, why O. connects Jaeger's work on Aristotle with all this, for though J. was undoubtedly influenced by such notions, current at the time, as the evolution of personality and thought, his interpretation is independent of them in as much as he attempts to support his views by an analysis of texts.'

The genetic approach

standing of the main lines of Aristotle's thought. Yet in another way the genetic outlook (that is, the awareness of Aristotle's philosophy not as something static, a single self-consistent system, but as a dynamic process of continual growth from its Platonic roots) cannot but permeate the work of any writer on Aristotle today. Whatever one may think of the correctness of its results, it has taught that there is a better way of looking at him than that hitherto traditional. It is better not only as representing a sounder method of scholarship but also because this method, by demanding a critical study of the historical background of the philosopher, his life (especially his long-standing membership of Plato's Academy), the idiosyncracies of his mind and personality¹ and the variety of his writings, has brought a new vigour and attractiveness into Aristotelian studies. As a German scholar wrote in the first flush of enthusiasm, less than a year after Jaeger's book was published, 'Jaeger resuscitated the living Aristotle in the flesh'.²

For these reasons I shall make some general remarks at the outset about development-theory, so that they may be in a reader's mind when we turn to a more systematic consideration of the various branches of Aristotelian philosophy. It rests on the belief that from the evidence at our disposal, both in the surviving works of Aristotle and elsewhere, we can trace a process of development in something deeper than the mere expression and formulation of his thought. This is an idea with which we are all familiar in the study of Plato. In fact most of us are now, especially since the achievements of stylometry, so used to regarding many of the most important dialogues in a certain order, corresponding to the development of the author's thought, that we are apt to forget how recent are the researches which allow us to place them so confidently. No one would deny that they have led to a better understanding of Plato, and it was natural that scholars should at least wonder whether a similar service might be rendered to our understanding of Aristotle. On the other hand he presented a very

¹ Dirlmeier's warning of the difficulties of reconstructing the personality of an ancient Greek (*A. in der neu. Forsch.*, 148f.) is perhaps salutary; but his argument that the attempt itself is anachronistic seems to rest on the curious fallacy that because the Greeks did not consciously possess and make use of the concept of personality, therefore they had no personalities, and to suggest that they had is to project a modern thought-category back into antiquity.

² E. Hoffmann in 1924, quoted by de Vogel, *Philos.* 1, 296.

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different problem, and any new theories were bound to be hampered by the clinging weight of the scholastic tradition already mentioned. Nor must one ignore the possibility that although it is psychologically unlikely that Aristotle's philosophy underwent no change or development from his teens to his sixties, yet so far as we can learn it from the surviving documents the traditional picture might be the true one – if, that is, they were all written after his mature system had taken shape. In fact it is for the seeker after development to think twice and produce good reasons before proceeding with his researches. If we wish to share the thoughts of a great philosopher, and his writings as they stand offer a coherent and intelligible account, there are more profitable ways of spending our lives than by picking them to pieces in a search for traces of change and development in his thought. The attempt at dissection may be positively harmful by casting unnecessary obscurity over what, if read in a straightforward and receptive way, is lucid, comprehensible and philosophically interesting. The genetic approach is only justified if there is a chance that its results may clear up some real and fundamental difficulty which other methods of study have so far failed to remove.

In Aristotle's case there is such a difficulty. To see what it is one need only make two simple statements which no one can deny, though some might think it superfluous to repeat once more what everybody knows. First, it is generally agreed that Platonism and Aristotelianism are not the same, that they stand for two different ways of looking at the world, that the Platonist is of a different intellectual character from the Aristotelian. Secondly, we have a well-attested historical fact, namely that Aristotle received his early philosophical training at Plato's feet, and remained for twenty years a member of the school of which Plato was founder and head. In this general form, the statement can incur no suspicion of unfairness or distortion by any remarks which we may make later on, of the nature of the Academy and Aristotle's attitude towards it during the period, so far as they can be recovered or at least conjectured with reasonable probability.

We set out, then, from the admission that there is a difficulty in reconciling the commonly received opinion about Aristotle's philosophy, stated in its most general terms, with a known fact about the

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foundations of his thought. This leaves a wide selection of more or less likely hypotheses from which to approach the evidence. First, there are the two extremes. I should not like to spend much time considering the possibility that Aristotle remained till his death devoted to the letter of Platonism. It would demand at least the sophistic agility of the author of *On Nature, or What is Not*. If on the other hand he was an active anti-Platonist from his earliest years, one's first reaction would be one of amazement that he was allowed, or indeed that he wished, to remain within the Academy. Here one must face the fact that perhaps the most distinguished of living Aristotelian scholars, Professor Ingemar Düring, insists emphatically and repeatedly that Aristotle took up a position opposed to Plato *from the beginning*.¹ It would be unrewarding to criticize Düring's view in detail. I shall simply make one comment now, and in the following pages treat the question when Aristotle diverged from Plato as still open to discussion.

The comment is this. Aristotle, son of a successful doctor in the far north of Greece, came to Athens for the first time at the age of seventeen to enrol as a pupil in Plato's Academy. I do not see how anyone can believe that this provincial boy *began* by setting up theories in opposition to the head of the school who was forty years his senior. Yet if one does not take 'from the beginning' in this impossibly literal way, the highly interesting question remains to be asked: *When* did he begin to diverge? Where in the surviving records does his independence of Plato begin to show, and to what period of life can it be assigned? It could be that there is not the evidence to decide, or that none of the writings known to us belongs to his Platonic period. That,

¹ 'Von Anfang an' and 'anfangs' are favourite expressions of Düring in this connexion. Both occur on p. 46 of his *Aristoteles*, and 'von Anfang an' again on pp. 64, 94, 202, 290, 457. Cf. also his *RE* article (*Suppl.* xi, col. 329): 'A. stellte sich anfangs stark in Gegensatz zu Platon.' As allies in refuting Jaeger, D. refers only to E. Frank ('The Fundamental Opposition of Plato and A.', *AJP* 1940) and Cherniss (*ACPA*, App. 2, 488-94). Both these scholars, however, deal only with the passages in the *Met.* quoted by Jaeger as supporting his case. Neither mentions the exoteric works at all. Moreover Frank's articles are sometimes obscure in expression and contain several misleading statements. (He speaks for instance of Plato's 'conception of God as the transcendent good'.) D.'s idea takes us back to Bernays in 1863. See his *Dialoge*, 23, 25, 26 (on the *Eudemus*).

Among many places where information about J.'s critics can be found one may mention (besides Berti, *Primo A.*), de Vogel, *Philos.* 1, 296-9 (a historical survey first published in 1965), Lesky, *HGL*, 575f. (Eng. tr. from 2nd ed. 1963) and Lynch, *A.'s School*, 77 n.14.

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however, must be settled by an examination of the evidence; it cannot be closed *ab initio* by any talk of 'from the very beginning'.¹

Between the extremes we have the choice of several more moderate opinions. We might admit that we know less of Plato's thought in his latest years, agree that this was when Aristotle knew him best, and conclude that what he did was simply to draw out the implications of his master's philosophy as it was developing just before his death – much as one might argue that Plato did with his own master Socrates. In modification of this we might maintain that Aristotle remained always devoted to Platonism, and without sticking to the letter of Plato's writings, has preserved the real kernel of the system and dropped nothing but inessentials. There was in fact a powerful school of Neoplatonic interpreters who did their best to maintain that in all essentials the message of the two philosophers was the same, though its claims have found little response in more recent times. In this connexion we shall clearly have to decide more precisely what we are going to mean by the vague word 'Platonism'. Perhaps, as E. Berti more than once suggests, scholars are mistaken in thinking of the abandonment of transcendent Forms as synonymous with the abandonment of Platonism. After a long review of scholarship Berti writes:

While appreciating the seriousness of all these analyses, one cannot but remark that they all stem from Jaeger's assumption that Platonism is simply identical with the doctrine of Ideas, and their abandonment means turning one's back on it.

Again:

After this elucidation there is no difficulty about admitting the Platonism of fr. 8 of *De philosophia*, provided only that by Platonism is not meant simply the antithesis of Aristotelianism and in particular adhesion to the doctrine of separate Ideas.²

Perhaps, however, after starting as a good and loyal Platonist, he later, whether gradually or suddenly, turned round to criticize Plato's

¹ Düring is not alone in his extreme view. Cf. Flashar (*Articles on A.*, 12 n. 18): 'There is no clear evidence that Aristotle at any time gave allegiance to the Platonic Ideas.' I hope to produce some reasonably cogent evidence as we proceed, particularly with reference to the *Eudemus* and *Protrepticus*.

² See pp. 323 and 328 of Berti's most useful book already mentioned, *La filosofia del primo A.* In the last volume I ventured to call A. a Platonist without the transcendent Forms (p. 414).

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philosophy at its most vital point, and set up a system in opposition to it. One more possibility. Knowing that Aristotle was of a very different mental disposition from Plato, have we the right to say that he never understood his master in essentials, and in the end was led to criticisms which, because based on misunderstandings, are simply irrelevant and do not affect Plato at all?

In this century most points of view have found supporters, especially in Germany, where the problem of the relations between the two philosophers aroused particular interest. In 1919 the great Wilamowitz delivered his opinion thus:

The way in which [Aristotle] transformed the doctrine of Ideas . . . robbed it of the value it still possessed for Plato, and in the pre-existence of the soul he lost one of the chief tenets of his creed. So there drew on with tragic inevitability an estrangement between the master and his great pupil.

The same writer dealt summarily with the possibility that Aristotle might have found himself more in sympathy with Plato in his old age, when he knew him so much better than we do: 'Then came Pythagorizing, playing with numbers, superstitious demonology . . . The Plato who wrote the *Republic* would have come to an understanding with the Aristotelian conception of form; the old man simply avoided the subject.' Others have thought differently. Julius Stenzel in 1924 declared his aim as being 'to show Aristotle as him who preserves the spiritual centre of Plato in a new form, a form not based on the combination of poet and thinker, in the last resort incomprehensible, which was realized in Plato for the first and last time.' Jaeger himself wrote:

After initial attempts at naive imitation and continuation of the Platonic system, there follows a period in which he has learned to distinguish between the lasting essence of the Platonic heritage and whatever in its formulation was either inimitable or out of date. The latter he now seeks to be rid of, while he is at pains to preserve the essentials intact.¹

The charge of misunderstanding goes back to antiquity. The Platonist Atticus (2nd cent. A.D.) castigated Aristotle because he 'made himself the measure and judge of things which went over his head. He

¹ Wilamowitz, *Pl.* I, 728; Stenzel, last words of *Zahl u. Gestalt*; Jaeger, *Aristoteles* 1923, 11 (trans. W.K.C.G.).

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rejected those peculiar existents which Plato had recognized and dared to describe the supreme realities as nonsensical, a meaningless jingle of words.' So in our own day Burnet: 'In the first place it is certain that he never understood the teaching of the head of the Academy.'¹

There was then (and many more examples could be quoted) plenty of room for differences of opinion up to the time when a more scientific criticism was brought to bear on the relations between the two philosophies. What perhaps needs explanation is how the traditional view of Aristotle managed to hold its ground for so long. It was not that Aristotle's early² attachment to Plato and the Academy was either unknown or deliberately ignored; but it was commonly considered that a sharp line could be drawn between that period and the years of the 'real' or philosophically mature Aristotle. Moreover the lecture-papers and notebooks which we possess, and which were considered the only basis on which his philosophy could be judged, belonged without exception to this later period, in fact to the days of the Lyceum, the last ten years of his life, when Plato had long been dead and Aristotle was the head of an independent school of his own foundation. His early writings were in the first place lost, but in the second place not greatly to be mourned, since they could only have shown us an Aristotle still fettered by a system which he was soon to cast aside like an empty pupa-case, setting free for coming flights the wings of a purely native genius.

The attempt, then, to look for traces of change in Aristotle's philosophy as he grew older, if it has any hopes of success, is justifiable, since it offers the prospect of a solution to one of the most interesting problems raised by his remains, the problem of his relation to Plato. It remains to mention the means available, and the methods employed, for the attainment of that end.

Modern development-theories base their hopes on two things:

(1) That from references and quotations in other authors, considerable information on the content of Aristotle's lost works can be recovered, significant for the development of his philosophy; (2) that

¹ Atticus *op. Eus. Pr. Ev.* 15.4, text on p. 327 of *AABT*; Burnet, *Platonism*, 56. Aristotle did in fact call the Forms *τεπεικωματα* (*An. Post.* 83 a 33).

² Yet not so very early; it lasted at least until he was 37.

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the writings which we still possess, far from belonging exclusively to the last years of his life, show unmistakable traces of different stages in the evolution of his philosophy.¹ These it should be possible, tentatively at least, and in the future perhaps decisively, to disentangle; and the resulting portrait of Aristotle, it is claimed, will be radically different from the old one. These aims also indicate the methods to be pursued. First, there are the avowed compilations or anthologies of extracts to be combed, like that of John of Stobi in the fifth century A.D. and the Greek commentaries on Aristotle with their frequent references to works now lost. Apart from this one must rely on the delicate and difficult ways of source-criticism, the examination of a later philosophical writer – Cicero perhaps, or Sextus Empiricus or one of the Neoplatonists – to discover where he got his material. It may be original or (equally probable in the case of a post-Aristotelian philosopher) it may not. Does it perhaps go back to Aristotle? If an author mentions him by name, as Cicero sometimes does, the task is of course easier, but one still has to take into account the trustworthiness of the recorder. Is he the man to reproduce an idea faithfully, and is he in any case likely to have known his Aristotle at first hand or through the medium of someone else, a Stoic perhaps, who had his own axe to grind and saw the earlier philosopher from his own perspective?

Next comes the approach to Aristotle himself in his surviving works. Any express indications of date are seized on,² then the more important of his ideas are examined in the various ways and places in which they are introduced, to see whether they seem to betray any genuine inconsistencies of thought. These form the material for investigation. The task is certainly not done when they are discovered. Some have succumbed to the temptation to take such inconsistencies at their face

¹ Contrast the old belief, exemplified by Bernays, *Dialoge*, 128: 'Alle uns vorliegenden Werke fallen in die letzte Lebensperiode des A. . . Nirgends sehen wir der Baumeister noch bauen.'

² For these see Düring, *Arist.*, 43f., where he emphasizes the need for this type of research. 'Whoever tries to determine the relative chronology of the writings must repeatedly use the thesis to be proved as the basis of proof. If in spite of this I make the attempt, it is because I am convinced that a working hypothesis about the chronological order of his writings is a necessary condition for their detailed interpretation.' The whole paragraph offers an enthusiastic recommendation of the genetic method, which makes all the more surprising D.'s uncompromising denial that this pupil of Plato ever accepted the central tenet of Plato's teaching.

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value and cut Aristotle into bits, each forming a neat and consistent pattern of ideas, which they label periods of his thought. The probability is rather that inconsistencies will have existed side by side.¹ It is on the face of it unlikely that Aristotle, alone among philosophers, succeeded in producing an entirely well-rounded and flawless scheme of reality and our knowledge of it. Nor was he the sort of thinker to relapse into complacency, smooth down rough edges artificially or gloss over real and unanswerable difficulties. Hence this method is only likely to succeed if the user can bring to it a considerable general knowledge of Aristotle as a man and a philosopher. Only through the insight derived from such an acquaintance can one conjecture happily how his mind is likely to have worked in a particular instance.

Another aid called in by some researchers is the evidence of style. This is dangerous ground, and has not been worked over for Aristotle by the scientific and statistical methods applied to Plato. In Aristotle, the rough, non-literary character of most of the surviving works makes it less likely that in their case such methods would be fruitful. One interesting point may, however, be mentioned under this heading, namely that in speaking of the believers in transcendent Forms in *Met. A* ch. 9 Aristotle occasionally slips into the first person ('the ways in which we show that the Forms exist' etc.), apparently associating himself not only with the Academy but with those members of it (and they were by no means all) who clung to the Platonic theory of Forms.² There is also a much broader distinction to be recognized

¹ I am glad to quote here the point made by a leading authority on A., Paul Moraux (in *Symp. Ar.* 1, 132):

'In the same way that his early works could be dependent on Platonic dialogues whose doctrines were already superseded by Plato's work, so his school-writings sometimes reproduce views taken from works published at an earlier stage of his development. It is often tempting to see this development as a pure and simple replacement of old views by new. Aristotle seems rather to have found it an enriching and deepening of his own thought. He had no hesitation in introducing side by side in his school-works views which had emerged at different stages of his intellectual progress, even when the antinomies produced by such a juxtaposition could not be altogether satisfactorily eliminated.'

² There are 9 'we'-passages, 990b 9, 11, 16, 23; 991b 7, 992a 11, 25, 27, 28. Jaeger (*Aristotle*, 171) called attention to the fact that A. is still writing as a Platonist. Cherniss's attempt to deny the plain meaning of the text (*ACP*, 489ff.) is unconvincing, as are the alternatives offered at the top of his p. 491. It is not surprising that A. more often uses the third person: the interesting thing is that his notes should sometimes slip like this into the first. The statement above that A.'s text has not been worked upon statistically should perhaps be modified by reference to the work in progress of A. Kenny.

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now that the remains of the literary works are being allowed into the discussion. The bulk of the writings which have come down to us are manuscripts for lectures (perhaps in a few cases even the notes of pupils) or the notebooks of a scientific researcher.¹ These, as might be expected, sometimes consist of mere jottings, not even in the form of complete sentences. A word or two may suffice for the introduction of a subject, to be elaborated orally in the lecture-room. The published works on the other hand, none of which² has survived entire, won high praise from the literary critics of antiquity. The existence of these two utterly different styles might just possibly assist a scholar in trying to place a quotation; a dangerous expedient again, but one occasionally resorted to. This question of the nature of the Aristotelian writings has its own interest and importance, and will be considered later (ch. III).

Much of the work just described is, as one would expect, delicate and difficult, demanding not only careful attention to detail but also a certain flair which is by no means granted to everybody. But as I have already explained, this brief account of the aims, methods and advantages of the genetic viewpoint has not been intended as preparation for a detailed exposition of its findings in subsequent pages, which in a general survey of Aristotle's philosophy would sometimes be irrelevant and confusing, as well as controversial. That philosophy can still be regarded as in outline at least a unitary system,³ a brilliant synthesis culminating in the extraordinary conception of the Divine Intellect which is the ultimate cause of the universe, while remaining completely indifferent to its existence or non-existence. What we owe to the development-theorists is a constant awareness that we are in the presence not of a writer of textbooks but of a lively and highly original

¹ One might note in passing a comment of Thomas Case (*Mind* 1925, 81): 'In the first place as regards style, though the Stagirite pupil could never rival his Attic master in literary style, yet he did a signal service to philosophy in passing from the vague generalities of the dialogue [!] to the scientific precision of the didactic treatise. The philosophy of Plato is dialogue trying to become science; that of Aristotle science retaining traces of dialectic.'

² With the exception of the *Constitution of Athens*, rediscovered on papyrus in modern times (1890). Düring, however, is hesitant about accepting it as authentic Aristotle. See his *Arist.*, 477, but cf. pp. 334f. below.

³ C. H. Kahn has some judicious remarks about this in *CP* 1963, 267, e.g. 'In the overwhelming concern for historical interpretation which has followed upon Jaeger's work, there is a real danger of losing sight altogether of the underlying unity and coherence of Aristotle's thought.'

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genius, subject moreover throughout his maturity to a continual *tension* between his twenty years of association with Plato and his own in some ways very un-Platonic temperament.

(3) A general comment on Jaeger's view

We have seen already that since Jaeger published his tentative account of Aristotle's philosophical development scholarship has not stood still, even if many of his critics have had to build their own structure on the foundations which he so efficiently laid. The pioneer of a new method may be led a little astray by his own enthusiasm and claim for his discoveries rather more than they can actually perform; and it is probably fair to say that Jaeger's own work is not free from this fault of exaggerating the range of application of his theory – the characteristic defect, one might say, of its very great merits.

The problem is to determine the relation of Aristotle's philosophy to Plato's. An examination of the fragments of the early works had satisfied Jaeger that in his young days Aristotle was, as one would expect, a wholehearted sympathizer with Platonism. He accepted everything: the *Forms*, and the doctrines of immortality, rebirth and recollection that go naturally with them. When we turn to the treatises which we possess entire, we find him looking at Platonism from the standpoint of an independent critic, and expressly renouncing the belief in the existence of transcendent *Forms*. Noticeable also is a feature that must be regarded as characteristically Aristotelian: his interest in the natural sciences, especially biology, prompted by a firm belief in the reality of the physical world and in its study as an indispensable instrument of knowledge.

Jaeger took these facts, that Aristotle started his career as a Platonist and finished it as something different, and was inclined to conclude on no other grounds that the development of his philosophy took the form of a steady and continuous movement away from Platonism; and to use this conclusion as a premise for all subsequent deductions. Thus when a new portion of the Aristotelian corpus came up for discussion, he asked the question; 'How far removed from Plato is its philosophical position?', and according to the answer assigned it its place, early or late, in the chronological series of Aristotle's writings. Some-

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times indeed he seems to complete the circle of argument, and if a document is known on external grounds to be late, to emphasize in it any distinctively Aristotelian features and belittle whatever Platonic colour it may possess.

Yet obviously the hypothesis that Aristotle's development away from Plato was steady and continuous rests on slender foundations, and is indeed psychologically rather improbable. If one has fallen under the influence of a great man at the age of seventeen, and accepted his words as gospel, the discovery after a good many years that one can no longer subscribe to the doctrine that was the keystone of the whole philosophy¹ must be quite a serious shock; and the immediate result is likely to be an irrationally strong revulsion from the whole thing. Riper years and maturer meditation may enable one to see that the breach is not so wide as it had seemed, and one's early faith not altogether misplaced. In fact the tension already mentioned leads to a certain *oscillation* in the movement of his thought. This is at present an *a priori* hypothesis as much as Jaeger's. I think that a study of Aristotle's metaphysics and cosmology provides some evidence in its favour,² but at present I only want to point out that it is this assumption of a steady development away from Plato that has given the best handle to Jaeger's critics.³ On the other hand their criticisms have not always been clearly thought out, and so, though directed against a real weakness, have lacked conclusiveness.

One example raises a point of sufficient general interest to be worth mention in these introductory pages. One of the ways by which Jaeger claimed to trace Aristotle's steady development away from Plato was by observing the degree of prominence which he gives to pure philosophy or metaphysics. His interest in it was a legacy from

¹ Some scholars believe that Plato himself renounced the doctrine, and claim to find evidence of this in his later dialogues. Readers of the previous volume will know that I do not take this view. More to the point is that Aristotle did not either. Though he knew and quotes from the later dialogues, he consistently ascribes the doctrine to Plato (as e.g. in *Met. A* ch. 6), with no hint that he ever abandoned it. Cf. Frank, *AJP* 1940, 35 (in his article on the fundamental difference between A. and Plato).

² I have in mind my own studies of the development of Aristotle's theology in *CQ* 1933 and 1934 and the Loeb ed. of *De caelo*.

³ Düring (*Gnomon* 1959, 415) calls the sentence *MA* 700b 32-35 'an outburst of Platonism', and comments: 'The greater the distance in time from Plato, the nearer he [A.] comes to his old teacher in the appreciation of certain supreme and transcendental principles.'

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his master, and as he matured he gave it less and less attention and turned increasingly to the study of the physical world. In a lecture on Aristotle in 1924 Burnet criticized this view by pointing among other things to the last pages of the *Nicomachean Ethics*, which contain an exaltation of the life of *theoria* – disinterested enquiry or, as Burnet called it, theoretical wisdom – as the highest and most distinctively human form of activity. The social virtues, whose discussion has filled the greater part of the treatise, are, Aristotle finally concludes, secondary to this. 'If then', said Burnet, 'the *Nicomachean Ethics* belongs, as Jaeger holds it does, to the last years of his life, we shall be driven to conclude that, at the time of his death, Aristotle was on the point of teaching a system in which everything was to be subordinated to the theoretic or contemplative life.' Burnet's distinction is between the whole field of disinterested enquiry (*theoria*) and studies like ethics and politics. These, in Aristotle's view, as he says himself, are not undertaken for the sake of *theoria* but aim at right action (*praxis*): he is opposing the theoretic life to the practical. The life of *theoria* obviously includes the special or empirical sciences, since they as much as any other kind of philosophy can be (and were in Aristotle's day) pursued for their own sake with no ulterior practical purpose.¹ Yet if I understand him rightly, Burnet thought he was proposing an alternative to Jaeger's thesis, which, however, was not that the disinterested search for knowledge was yielding in Aristotle's mind to studies with a practical end in view, but that the abstract, mathematical and other-worldly characteristics of Platonism were giving place to the inductive sciences like biology.

The English expression 'pure science' is ambiguous. It may mean either (a) pure as opposed to applied, i.e. the pursuit of any knowledge for its own sake with no practical aim beyond, or (b) pure as opposed to empirical science, a science which is deductive, which relies on processes of thought going on within the mind rather than on an appeal to observation and experience of the external world.² Only the second sense can have any application to Jaeger's thesis. It would indeed be

¹ ἡ φυσικὴ θεωρητικὴ, *Met.* 1026a6.

² This elementary point was well brought out by Stebbing in her *Mod. Introd. to Logic*, 232. A science can of course be pure in both senses, as pure mathematics is.

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strange if he had said that an increasing interest in the utilitarian value of philosophy marked a step in the departure of Aristotle from the Platonic spirit. The author of the *Republic* and the sponsor of those adventures in government which Plato undertook in Sicily was always more interested than his pupil ever was in the application of philosophy to the circumstances of human life. This indeed is one of the most fundamental differences between the two. Knowledge for Plato was a means towards understanding (and hence possessing) the Good. For Aristotle it was enough that 'All men by nature seek knowledge.'¹ No further end need be sought: it was itself the end. Jaeger I am sure would have agreed that as he freed himself from his Academic training he became more and more absorbed in the pursuit of knowledge and less interested in the moral and social virtues, in the study of which he maintained that one cannot and should not look for the precision which alone deserves the name of knowledge (*epistēmē*). For that reason, though necessary (since we are not disembodied minds), it is a definitely subordinate study.²

As a final note, it is interesting to observe how before a theory has been mooted, good scholars with the same material to work on can innocently assume that all the evidence would be against it if it were. So Sir Alexander Grant, who certainly knew his Aristotle, could write in the 1850s supporting the view that all Aristotle's extant works belong to the days of the Lyceum (the fragments of the exoteric or other lost writings he dismissed as either forgeries or unimportant): 'For these books may be stated broadly to be quite homogeneous. They belong to *one* period of the philosopher's mind . . . It is only in minute points that a development of ideas or of modes of expression can be traced by comparing different parts of these works with each other.'³

¹ The opening words of Aristotle's *Metaphysics*.

² This will be amplified in a later chapter: see pp. 338ff.

³ Grant, *Ethics* 1, 3. For the fragments see *ib.* 15.

II

ARISTOTLE'S LIFE AND PHILOSOPHICAL PILGRIMAGE

Note on sources

These have been collected and edited by Düring in a book which has put every student of Aristotle deeply in his debt, *Aristotle in the Ancient Biographical Tradition* (Göteborg 1957; to be referred to here as *AABT*).¹

A brief factual outline is in Dionysius of Halicarnassus, who lived at Rome in the time of Augustus, for twenty years from 30 B.C. This was a time of great activity in Aristotelian studies at Rome, as we shall see.

Then there is our familiar stand-by, the *Lives and Opinions of Eminent Philosophers* by Diogenes Laertius. Though somewhat uncritical, and writing in the third century A.D., he quotes authorities of the second and third centuries B.C., including Hermippus (late 3rd cent.), who wrote, among many other biographies, a book on Aristotle which Diogenes cites by name. Düring (*AABT*, 79; cf. 275) considers it to have been his main source. Hermippus was called a Peripatetic, though the writer of the article on him in the *RE* (VIII, 845-6) says that by the time the title was given him it was being applied indiscriminately to writers of literary history and biography. However, he was certainly an admirer of Aristotle.

There are also three biographies of Neoplatonic or Byzantine date, known respectively as the *Vita Marciana*, *Vulgata* and *Latina* (*VM*, *VV* and *VL*), and a brief one, followed by a list of Aristotle's writings, by Hesychius of Miletus.² Full texts are published in *AABT* with comments on their characters, ancestry and mutual relations.

Next we have the Syriac and Arabic tradition, the value of which has been demonstrated by Düring. The Arabic writers claim to be drawing their information from a certain Ptolemy, whom they call 'the foreigner' (*al garīb*), whose identity is unknown, but whom Düring takes to be an Alexandrian Neoplatonist writing in the fourth century.³

¹ Further ref. are in Lynch, *A's School*, 68 n.1. The contributions of Chroust, as he says, tend to be rather speculative.

² 6th cent. A.D.; nor the lexicographer.

³ On this see *AABT*, 208-11, 475 and Moraux, *Listes*, 288-94. Ptolemy is mentioned in *V. Marc.* and *V. Lat.* as well as by the Arabic scholars. Neither Düring nor Moraux favours von Christ's identification of him with one Ptolemy Chennos of the 1st cent. A.D. (though the equation Chennos = *ḥivoṣ* = *garīb* is undeniably neat).

Aristotle's life and philosophical pilgrimage

Besides actual biographies, there are of course many pieces of biographical information to be picked up in various ancient writers. These will be found in Part III of *AABT*. One should note finally Düring's judgement that 'the careful account of the chronology of Aristotle's life, which we possess in three different versions, is ultimately derived from Philochorus' (*AABT*, 463; cf. 79). Philochorus of Athens, the chronicler ('*Atthidographer*'), held certain public offices at Athens in 306 B.C., and his *Atthis* went down to 261. He was therefore not only a professional historian, but at the height of his career less than twenty years after Aristotle's death. The surviving documents show that there were two lines of tradition about Aristotle, one favourable and the other hostile and slanderous. Philochorus appears to have been one of his earliest defenders.¹

In the external circumstances which played upon the mind of Aristotle there was certainly no lack of variety. Science was in his blood and probably in his early upbringing. He knew life at two royal courts, both semi-Greek or at least on the very frontiers of Greek civilization, and had one of the world's great conquerors for a pupil. Himself an Ionian Greek from Thrace, he spent thirty years of his life in Athens as a metic, in the city but without a citizen's rights.² Here he experienced the friendship of Plato and twenty years of the life and work of the Academy. According to a strong tradition he saw his native city destroyed by one king and rebuilt by permission of his greater successor as a personal favour to himself.³ Finally he learned what it is to have been the friend of a prince who no longer lives, and had to leave his second home and die in exile, in order, as he is said to have put it himself, to prevent the Athenians from committing a second sin against philosophy (*AABT*, 340, 342).

Aristotle⁴ was born at Stagira (or Stagirus), on the east side of the peninsula of Chalkidikē in Thrace, in 384 B.C. (first year of 91st Olympiad, archonship of Diopetithes), which makes him three years

¹ On the contribution of Philochorus see Düring, *Arist.*, 18.

² On A.'s own attitude to his *metekta* D. Whitehead has an interesting note in *PCPS* 1975.

³ See p. 37 n. 1 below.

⁴ Scholars like to speak of 'the legend of Aristotle', as in the title of Mulvany's article in *CQ* 1926, but amid the diverse information about him, they do not always agree what belongs to the 'legend' and what to history. This must remain to some extent a matter of personal judgement, and readers must not be surprised to find that the account given here does not tally in every particular with those they may read elsewhere. Any sources to which full reference is not given will easily be found in *AABT*.

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older than Demosthenes, as Dionysius of Halicarnassus pointed out. His father Nicomachus was personal physician to King Amyntas of Macedonia, father of Philip and grandfather of Alexander the Great, and both he and Aristotle's mother Phaestis claimed Asclepiad descent. This meant that both came from a long line of physicians, who as the Hippocratic Corpus and other medical writers bear witness, were the chief representatives of empirical science among the Greeks. As Dionysius also remarked, his bent for science and medicine¹ was an inheritance from his father and forefathers. He was left early an orphan, and his education was completed under the supervision of a guardian, Proxenus, said to have come from the Anatolian city of Atarneus, which Aristotle was to know well in later life. It would be interesting to know how much the boy owed to Proxenus, who remains a shadowy figure, save for the fact that Aristotle, as his will testifies, retained an affection for him and his family till he died.

At the age of seventeen he came to Athens to complete his education and joined Plato's Academy, which must by then have been in existence for some twenty years. Plato himself, however, was away on his second visit to Sicily, engaged in the pathetic attempt to turn Dionysius II into a philosopher as well as a king, and remained there for two or three years.² Most scholars believe that he had left his brilliant young associate Eudoxus in charge of the school,³ with whom accordingly Aristotle would have had his first contact. He certainly admired him.

¹ On the connexion between the two see A. himself (*De sensu* 436 a 17; cf. *De resp. ad fin.*): 'It falls also within the province of natural science to grasp the first principles of health and disease, neither of which can occur in lifeless objects. For this reason most scientists come in the end to medicine, and physicians who pursue their art philosophically start from general physical principles.'

² See vol. IV, 24 and 26. Berti (*Primo A.*, 139) says P. was away from late spring 367 to the beginning of 364 (Ol. 103.4).

³ The only evidence is the words 'tempore Eudoxi' in the *VL*, in a not very clear sentence the purpose of which is to deny that A. was 40 when he became P.'s pupil. From this *ἐν* Εὐδόξου has been restored in a gap in the *VM*. (Texts in *AABT*, 152, 99; these Lives have it that A. first studied under Socrates!) For my own doubts see vol. V, 448 and cf. Jaeger, *Aristotle*, 16 n. 2: 'What his authority told [the excerptor] was simply that Aristotle's entry coincided with Eudoxus' presence.' Owen calls the evidence 'thin' (*Proc. Brit. Ac.* 1965, 140) and Field (*P.'s C.*, 46) is lukewarm. Berti on p. 138 of *Primo A.* says that E.'s temporary scholarship is proved, but on the next page retreats to 'It is perhaps excessive to affirm that Eudoxus was actually scholar of the Academy.' For Düring however (*AABT*, 159), this is 'in point of substance the most valuable contribution of the *VL*', and in his outline of A.'s life in *Arist.* (p. 1) he includes without comment the fact that E. was scholar in 367/6.

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In the *Nicomachean Ethics* he speaks with respect of his moral character, and in the *Metaphysics* makes use of his astronomical system in constructing his own. Four or five years later, Plato left again for his final and disastrous Sicilian visit.

It follows that young Aristotle's personal intercourse with the venerable head of the school, now in his sixties, must have been grievously interrupted during his first ten years in Athens, but it would be useless to adduce this in favour of a thesis that Plato did not have much influence over him at all. Evidence from all sides shows that to be false. In fact if asked how Aristotle spent these first impressionable years, when the master's personality must have been only indirectly felt, my own guess would be that he occupied himself with reading the dialogues, perhaps especially the *Phaedo*.¹ One might reason that Aristotle had come a long way because the fame of Plato had reached his northern home. He had entered the school, where everything was animated by the great man's spirit but he himself, whom Aristotle had never seen, was absent. He had, however, left behind him a number of written works, and how else should the young student prepare for his return but by a study of them? And one could take it for granted that a boy with the intellectual curiosity of Aristotle would not soon tire of them once he had started.

That is only circumstantial evidence, but his close study of the dialogues is obvious from the large number of references to them in his extant works, written for the most part when he had already reached a critical standpoint of his own. This did not happen for some time. The *Eudemus*, though probably his own earliest dialogue, was written a good many years after his first entry into the Academy, yet both it and the *Protrepticus* taught a purely Platonic doctrine, and the *Eudemus* was closely modelled on the *Phaedo*.²

The extant works themselves, though sometimes fiercely critical of the Platonic theory of Forms, nevertheless reveal, as we shall have

¹ A., more than once uses the *Pho.* as his source when criticizing the theory of Forms. Ross in his ed. of the *Analytics* (p. 26) notes its influence on the Aristotelian syllogism. There was some basis in fact for Favorinus's pleasant story that when Plato gave a reading of the *Pho.*, only A., sat it out to the end; the rest of the audience had got up and left. (See D.L. 3.37.)

² This is, unfortunately, no longer an agreed fact, and I shall have to return to it later (pp. 66-73, 77-82).

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occasion to notice, the extent to which the direction of his thoughts was determined by Plato and the Academy. Without begging any questions, this must be the starting-point of any enquiry into his own philosophical achievement. Twenty years is a long time, and for so long did Aristotle remain in the Academy, enjoying the lively discussions of men whom Plato had trained in the art of dialectical argument, not moulded into a tame conformity. When on Plato's death he left Athens, he can have contemplated no break with the Academic tradition. He left with Xenocrates, a conservative Platonist and future head of the school, and it was to join another Platonic circle that they went.

The British *Daily Express* once commissioned a series of articles on great philosophers. That on Aristotle began: 'When Plato was keeping his school at Athens, a raw youth from Macedonia burst into the quiet groves where the old philosopher and his students walked and talked, bringing with him a new vigour and a new outlook.'¹ That, I suggest, is the picture of which we must rid our minds, the picture of a tough-minded, scientific Aristotle breaking rudely in on a school still living in the atmosphere of the *Phaedo* and *Republic*, and trying to shatter with his relentless logic its most cherished ideals. Aristotle was under eighteen, his opinions unformed, and his mind at a highly impressionable stage. He read the *Phaedo* eagerly, and it made such a deep impression on him that he could think of no better model when, years later, he too wanted to commemorate the death of a friend with a meditation on the nature and fate of the soul.

In this, far from being advanced, he was lagging well behind the rest of the Academy, possibly because he found their discussions a little difficult to follow. He was not naturally attracted to the study of mathematics. He mistrusted their remoteness from the actual world of things which could be seen and touched. Later he would criticize this remoteness with the confidence of an independent philosopher. ('The moderns have turned philosophy into mathematics, though they pretend that one should study them for further ends', *Met.* 992a32.) In his youth he probably found it puzzling as well as unsympathetic. As D'Arcy Thompson wrote: 'I am tempted to suspect that he

¹ *Daily Express*, 3 October 1933.

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sometimes passed shyly beneath the superscription over Plato's door.¹ And there is no doubt that mathematics were coming more and more to dominate Academic discussion in those years. The theory of Forms in its classical version was undergoing frank and lively criticism. Not that anyone in the school thought of himself as a rebel from Plato. More probably each thought of his own opinions as offering the only reasonable defence of true Platonism. One need look no further than the *Parmenides* to see that Plato himself was as alive as any to the logical dilemmas which the theory involved, and it was natural to hope that these could be avoided, and the fundamentals of the doctrine saved, by some remodelling in inessentials. The difficulty was to get agreement on what was fundamental and what inessential. For Speusippus, Plato's successor, the important thing was to preserve supersensible reality, and this, he thought, could only be done by dividing it even more sharply from the physical world, and emphasizing its abstractness. Consequently he proposed that numbers, not middle-dialogue Forms like Justice or Courage, were the first principles. Aristotle himself, when his empirical bent had developed into a fully thought-out philosophy, taught exactly the opposite.

The dialogues themselves it would be hard to draw into these discussions on account of their form. One cannot very well attack or defend in school-debates writings which combine their strictly philosophical content with exalted religious language, lively dramatic presentation, myth, humour, irony and pious reminiscences of a well-loved and martyred teacher. A member of the Academy of Plato's later years might affirm (as indeed might Plato himself) his lasting belief in them. His claim would be that it was in the interests of the principles involved that their ideas should be analysed apart from their setting. If pressed further and asked to say what was the fundamental tenet which the whole school shared and was prepared to defend against all comers, we can only guess at his answer. My own guess is that it would be something like this: 'What unites us is a common faith in the possibility of attaining genuine knowledge. Bound up with this is, of

¹ *A. as a Biologist*, 14. The alleged superscription was of course 'Only geometers may enter' (μηδὲς ἀγεωμέτρητος εἰσέρωι; authorities most fully given by Zeller, 2.1.431 n. 3). On A.'s mathematical ability see Additional Note on pp. 45-8 below.

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course, a belief in the existence of certain unchanging knowable principles to which the universe stands in some sort of relation, being neither a wholly illusory appearance nor yet a continuous flux of becoming and change of which nothing worth the name of knowledge is possible. Our common enemy, in short, is any form of scepticism.' To the end Aristotle retained at least this lowest common denominator of the Academic faith. For much of his time in the school he remained considerably closer in spirit to the dialogues than did some of his colleagues.

In 347 Plato died. Aristotle was of course long past the stage of being nothing but a receptive pupil. In the Academy he had the opportunity both of teaching¹ and of pursuing the scientific studies for which he had a natural bent, and which must already have made progress on independent lines and led him to take his own stand in the current philosophical discussions. The idea that his criticism of Plato began in Plato's lifetime goes back to Case and has the support of Jaeger as well as later writers.² He was in fact ready to produce his own brand of Platonism, and it was not that of the new head of the school. This was Speusippus, son of Plato's sister Potone, and our sources give various reasons for the choice. Philochorus (*ap.* Philodemus, *AABT*, 259) thought it lay in their relationship. As Plato's nearest relative he would naturally inherit the property (Düring, *Arist.*, 10), whereas Aristotle was not only unrelated, but as a metic could not inherit property at Athens without a special dispensation. It is not even known whether the choice was Plato's or made by the Academy after his death, as in the election of Xenocrates when Speusippus died. If an election was held, Speusippus's views may well have found favour with the majority, and they were sharply opposed to Aristotle's. One must remember in any case that he was twenty-five years older than Aristotle.

I have assumed as most probable that Plato's death was the main

¹ There is evidence that he gave a course on rhetoric in which he opposed the ideas of Isocrates. So Jaeger, and see Düring, *Eranos* 1956, 113; Berti, *Primo A.*, 175-85. Jaeger supposed that he also taught logic, and one may assume that during his twenty years at Athens he taught other things as well.

² For J.'s position (sometimes misunderstood) cf. de Vogel, *Philos.* 1, 299; for Case, his article in *Mind* 1925, 83 and 84 (referring to *De phil.* and *De ideis*). The evidence will be considered later.

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cause of Aristotle's departure from Athens. There was an early thread of tradition unfavourable to him, apparently going back to his pupil Aristoxenus, which started a story that he quarrelled with Plato and set up a rival school in Plato's lifetime. This was already refuted by Philochorus (i.e. before 300 B.C.) and later by Dionysius of Halicarnassus.¹ Whatever the reason for his failure to succeed Plato as head of the Academy and his subsequent departure, it can hardly have been due to a breach with Plato brought on by Aristotle's destructive criticism of Plato's philosophy. In spite of some harsh words about the theory of Forms, there is no need to question his sincerity when he wrote years later that it was uphill work for him to criticize it 'because the men who put it forward were my friends' (*EN* 1096a12). As we have seen (vol. v, ch. 10), there was no orthodoxy or censorship of opinion in the Academy in Plato's old age, nor any indication that he at any time rated his own theories higher than the continued search for truth. He would have thoroughly approved of the way Aristotle continues in the *Ethics*: 'I think it is better, indeed necessary, that we who are philosophers should do away even with what touches us personally in the interests of preserving truth. Both are dear, but it is a solemn duty to put truth first.'² In any case both Speusippus and

¹ On the unfavourable traditions about A. see Düring, *AABT*, 256L; for Philochorus *VM* 8-12 (*AABT*, 98f.) and for Dion. Hal. *AABT*, 258. *VM* (already, to all appearances, dependent ultimately on Philochorus) says A. stayed with Plato 'to the end' (or 'to his death', μέχρι τελευτης), but Düring himself assumed in *AABT* (pp. 276, 388, 459) that he left Athens just before Plato's death, the reason being his uncomfortable situation there as a friend of Macedon. This may well have contributed to his decision (cf. also Chroust in *Arist.* II, 117-24), but it is curious to accept as evidence for his early departure the bare words 'he was not present at Plato's death', quoted by Aristocles from Eubulides, a Megarian contemporary of A., together with other accusations, e.g. that he destroyed Plato's works. (Düring, *Arist.*, 10; Aristocles ap. Eus. *PE* 15.2.3, text in *AABT*, 373.) Of Eubulides, D.L. 2.109 records that 'he fell out with A. and slandered him freely.' Aristocles comments tersely: 'He is obviously lying.' This hardly seems to compete seriously with the statements of Dionysius and D.L. that he left Athens after Plato's death (*AABT*, 252f.). Merlan (*Philol.* 1959, 206 n.2) found it 'incomprehensible' that Düring could suppose A. left earlier.

² Hence ultimately (one would assume) the medieval saying 'Amicus quidem Plato sed magis amica veritas', but to trace this saying through history has a fascination of its own. In the *Vita Vulg.* of A. (9, p. 132 in *AABT*) it is attributed to Plato and applied to Socrates, in the form φίλος μὲν Σωκράτης ἀλλὰ μᾶλλον φιλότατος ἢ ἀληθής, which the *V. Lat.* renders (*AABT*, 154): 'Amicus quidem Socrates sed magis amica veritas'. This echoes the advice of Plato's Socrates at *Pha.* 91c σιωπὴν φροντισάντος Σωκράτους τῆς εὐαγγελίας πολὺ μᾶλλον, which is paraphrased by the *VV* (Σωκράτους μὲν ἐν' εὐαγγελίᾳ φροντιστὴν τῆς εὐαγγελίας ἐπὶ πολὺ) as a saying of Plato alongside the other. Plato also says something very similar about Homer (*Rep.* 595c). The *VM* gives the other form only.

[Footnote cont. overleaf]

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(spurred on, no doubt, by the difficulties that Plato himself raised in the *Parmenides*) Eudoxus had departed at least as far from his own theory as Aristotle ever did. Had he been an Athenian citizen Aristotle might have set up a school of his own there and then, where he could keep alive the form of Platonism which he was convinced was the best. Unfortunately he was not only an alien, but had strong family ties with Macedonia. Such a man cannot have been happy at Athens just after the fall of Olynthus had shocked the whole city.¹ It was just at this time, in the early part of 347, that Demosthenes began to be acknowledged as a political leader, and with his rousing challenge to the Macedonian peril he soon became the dominant figure in Athens. It was no place for a friend of Macedon. Nor could Aristotle return to his native city, for Stagira had been destroyed by Philip a few months before Olynthus.

In these circumstances he left for Asia Minor with Xenocrates, who later succeeded Speusippus as head of the Academy² and in his philosophy stood nearer Plato than Speusippus did. The departure, then, of Aristotle and Xenocrates to find in company a new home for philosophy is poor evidence for a breach between Aristotle and either Plato himself or the Academy. The same is true of the society in which they found their home. To understand it we must diverge for a moment into local history. Among several small independent Anatolian kingdoms which grew up in the fourth century under the shadow of the Persian empire was that of Hermias. His capital was Atarneus, a fortified city near the coast of Mysia. There are a fair number of

As for the later tradition, Sherrington says that Gui de Chauliac (13th cent.) wrote (the text is in Italian) 'Socrates is our friend, and Plato is our friend; but the truth is even more our friend'. Sherrington, who quotes this in *Man on his Nature*, does not seem aware that it was not original to de Chauliac (Pelican ed., 66, where the full ref. will be found). Sarton is equally confident, though a little out of date in his references. 'That sentence is often quoted, but few people could trace it to its source. It is taken from the life of A. by Ammonius Saccas [sic] . . . Ammonius applied it to Socrates, not to Plato, yet the numerous quotations already read *Amicus Plato*.' (*Hist. of Sci.* 1 1953, 427 n. 88, giving as his source Westermann's 1850 ed. of D.L. and other *Vitae*.) This is the life called in *AABT* the *Vita Vulgara*, text on pp. 131-6.

¹ On Olynthus see Moraux, *Listes*, 348. He puts its destruction by Philip in August 348, and that of Stagira at the end of 349.

² Düring (*Arist.*, 10, my italics) says 'vielleicht auch X.', but no other scholar has to my knowledge suggested any doubt. He says nothing more, but n. 39 on p. 11 is somewhat critical of the sources. Perhaps his doubts are due to A.'s depreciation of X. as a philosopher, of which he gives examples on pp. 258f., 371f.

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references to him in ancient literature, but our knowledge was enormously increased by the discovery in 1901 of a papyrus containing a part of the commentary of Didymus on the *Philippics* of Demosthenes.¹

Hermias was deeply involved in the political struggles of his time, and met with a violent end. Naturally therefore the descriptions of him varied widely. Didymus himself gives as his reason for treating of him at length that 'there are very great differences among those who have written about Hermias'. 'Some', he continues, 'represent him in a most favourable light, others as a worthless scoundrel.' The quotations which follow certainly bear out his words. Theopompus wrote that 'he got possession of Atarneus and all the nearby country by the most unprincipled means; for here by poison and there . . .'. The account is no less sinister for being broken off at this point by a gap in the papyrus. But the same authority, who was certainly not actuated by any liking for Hermias,² and even while calling him a barbarian and a slave (he was certainly of Greek lineage), went on: 'In other ways he has become a man of taste and culture, and though not a Hellene he studies philosophy with the Platonists.' He was evidently a strong character, and according to some accounts had worked his way up from the lowliest origins, having been the slave of a certain banker of Atarneus who had obtained a position of power in the city. His domain at first was nothing to boast of. Theopompus speaks of 'rocky peaks and small estates'. Money he had, as we should expect, and could enter expensive teams of horses at the festivals.

As his political success advanced, he learned of the presence of two interesting people at Skepsis, a small city thirty miles from his own, lying further inland. Two of its citizens were the Platonists Erastus and Coriscus, who after some years of study at Athens had returned to their native city. Probably Hermias himself already had an interest in philosophy and had visited Athens and the Academy. Strabo says that he had actually heard Plato and Aristotle there, but this is contradicted

¹ This is the Didymus who lived in the time of Cicero and Augustus, and whose capacity for hard work earned him the sobriquet of 'Brazen-guts' (χαλκίεντρος). In spite of gaps and imperfections, the text can be completed with fair certainty. For the account which follows, a reader may be referred to the now classic article of D. E. W. Wormell, 'The Literary Tradition concerning Hermias of Atarneus', *YCS* 1935, 57-92, and the texts and comment in Düring, *AABT*, 272-83.

² For the 'personal malevolence' of Theopompus see Wormell, *loc. cit.*, 73.

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by Plato himself if the Sixth Letter is genuine, in which he says that although he knows of Hermias he has never actually met him.¹ Probably Strabo jumped to conclusions, and Hermias visited Athens during one of Plato's absences abroad. It is just possible that the whole story of his visit arose out of his friendship with Erastus and Coriscus, though as Jaeger pointed out (*Aristotle*, 112f.), there is no need to presuppose an interest in Platonism to account for the friendship itself. Just as Eudoxus, when he returned from the Academy to his native Cnidus, was given high honours and requested to re-draft the city's laws, so too a small city like Skepsis would be proud of its two travelled and learned sons. It would be to Hermias's advantage to make friends with such influential neighbours.

He may, then, have welcomed assistance in putting into practice Platonic theories of government with which he was already familiar; or he may simply have been anxious to keep on good terms with his neighbours, and they, being Platonists and finding him of a receptive nature, imbued him subsequently with their own ideas. Whichever way it happened, the results are interesting. Aided, after their arrival, by Aristotle and Xenocrates, the Platonists persuaded him to modify considerably the usual administration of a petty tyranny, and he had reason to be grateful for it. As Didymus succinctly expresses it (probably quoting Hermippus): 'He deliberately turned his tyranny into a milder form of government, and thus added to his domain all the surrounding territory as far as Assos; wherefore he was greatly pleased with the said philosophers, and allotted to them the city of Assos.'² Here then was a little colony of Platonists, an offshoot of the Academy and just the place that Aristotle was looking for. Plato

¹ I cannot believe with Düring that Plato's words do not contradict Strabo's. 'Plato', he says (*AABT*, 279), 'merely states that he had not associated with him as a friend.' Such a meaning for *δρα μὴ ποτὶ συγγενονότι* here would be pointless, whatever it may be capable of meaning in other contexts. In my text I have followed Wormell and his authorities (*loc.*, 59). Morrow also has a note on the point in his ed. of the letters, 323 n. 5. For *Ep. 6* see the editions mentioned in vol. v, 399 n. 1, and vol. v itself, 400f.

² Mulvany (*CQ* 1926, 165) commented that though this might mean 'gave to dwell in' (as in fact the *Acad. Index. Herc.* says it did, *ἔδωκεν οἰκίσαι*, *AABT*, 273), it more probably meant that he assigned its revenues to them, because if they lived at Assos he would not have the benefit of their conversation and advice. This is speculation, and apart from the evidence of the *Index*, does not come naturally out of the Greek of Didymus if *ἀν' [ἐν] αὐτῇ τῇ Ἀσσίῳ πόλιν* is the correct restoration.

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was dead and Athens hostile, but here he could pursue his thoughts and develop philosophy on his own lines. He stayed at Assos for three years, during which he met his future wife Pythias. According to Strabo (13.1.37) she was the niece and adopted daughter of Hermias ('daughter or niece', D.L. 5.3), who gave her to Aristotle in marriage; but there is a genuine ring about the letter which he is said to have written to his Macedonian friend Antipater describing her as the tyrant's sister and saying that, after the catastrophe of her brother's murder, he had married her out of regard for their friendship.¹

It is this period at Assos which is nowadays thought to have been unduly neglected in the past. It is clear that, at least from the time when Aristotle and Xenocrates joined Erastus and Coriscus, there was a regular little school or community of philosophers there, engaged in discussion, teaching and research. Hermias gave them Assos for their home, says the *Index Academicorum* (*AABT*, 277), 'where they spent their time in philosophy, meeting together at a *peripatos*' – a prophetic word, for this term for a covered walk was to become, at Athens, the name by which the school of Aristotle and his successors went down to fame as the Peripatetic. This however was not considered important or interesting so long as the general, if rather uncritical, belief persisted that the extant writings of Aristotle belonged *en bloc* to the days of the Lyceum, the last ten years of his life. One interesting type of evidence to the contrary is the occurrence in his surviving biological works, especially the *Historia Animalium*, of place-names from N.W. Asia Minor and Lesbos, where he spent two years after the death of Hermias. This was first noticed by D'Arcy Thompson, whose results were later supplemented by H. D. P. Lee.² Thompson's conclusions, however, went rather further than the evidence warranted. For instance he wrote:

Throughout the *Natural History* references to places in Greece are few, while they are comparatively frequent to places in Macedonia and to places on the coast of Asia Minor, all the way from the Bosphorus to the Carian

¹ Aristocles *ap. Eus. PE* 15.2.9–10, *AABT*, 375. I do not know why Wormell calls this a forgery (*loc. cit.* 88). He gives no reason, and others extracts from letters to Antipater are generally accepted as genuine. Cf. e.g. Düring, *Arist.*, 14 n. 81.

² Thompson, *A. as a Biologist* (1913) and prefatory note to the Oxford trans. of *HA*; Lee, *CQ* 1948. Lee's figures are summarized by Düring, *Arist.*, 510.

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coast. I think it can be shown that Aristotle's natural history studies were carried on, or mainly carried on, in his middle age, between his two periods of residence at Athens; that the calm, landlocked lagoon at Pyrrha [on Lesbos] was one of his favourite hunting-grounds... Thus it would appear that Aristotle's work in natural history was antecedent to his more strictly philosophical work.

Elsewhere he said: 'But it is to the lagoon at Pyrrha that he oftenest alludes.'¹ This if true would of course be highly important for the chronology of the more philosophical works.

Now in his preface Thompson gives four references in the *HA* to Pyrrha and the Pyrrhean Euripus and two in other biological works.² This may be compared with six to Western Greece (Sicily, Syracuse and Tarentum) in the *HA* alone. The 39 references to 'Greece proper', to use Lee's term, include mentions of fauna in Attica, Boeotia, Arcadia, Epirus, and the Argolid. Of islands we find Cephallenia and Ithaca in the West as well as Crete and Cyprus, and Naxos in the Aegean. Even granted that much of the information from Asia Minor, Lesbos and Macedonia was the result of first-hand observation, that cannot prove more than that *some* biological research was carried out in these parts.³

It nevertheless remains a pity that Jaeger did not pay some attention to Thompson's words published thirteen years before his own book. They are part of the disproof of his thesis that Aristotle's scientific researches belong exclusively to the last years of his life, a thesis based somewhat arbitrarily on the premises that they are very different from Platonic philosophy and that his development must have been a steady one away from Plato (pp. 10-11 above). His Greek biographer knew better when he said that natural science was a lifelong interest of Aristotle, because it was inherited and a part of his family training.

For Aristotle an outstanding feature of those years must have been

¹ Quotations are from the preface to his Oxford translation of *HA* and *A. as a Biologist*, 12.

² Lee's count gives six in *HA* alone to 'the lagoon at Pyrrha'. I think four is right.

³ Lee's conclusions are more restrained. He speaks on pp. 64 and 66 of 'a considerable amount' and 'much' of A.'s biological research as belonging to the Assos and Mytilene periods, and moreover he adduces other evidence besides that of place-names in his support. However, since the above was written, a detailed criticism of the Thompson-Lee thesis by Solmsen has appeared in *Hermes* 1978, 467-84.

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the friendship of Hermias. Opinions might differ about his character. About the friendship too there are various accounts, including the scandalmongering commonly resorted to by personal enemies among the Greeks. But on one point there is not a dissentient voice, the reality and sincerity of the friendship. Hermias, says Didymus (Hermippus), was the grateful friend of all the philosophers, but Aristotle he welcomed most of all, and was most intimate with him. Here in Assos and Atarneus the spirit of Plato, as the Sixth Letter suggests, was being kept alive as he himself would have wished, and not the least important part of it was realized in the person of Hermias. The ideal of the philosophic ruler was one which Aristotle tried more than once to bring into being. In Hermias Erastus and Coriscus already hoped that they had found their man, and such was his character that with Aristotle's help they saw their plans come nearer to fulfilment than was granted to Plato. His experiments in Sicily would have had much more far-reaching effects had they succeeded, but his human material failed him, and it was left to his successors to bring his ideal a step nearer realization in their own small sphere. Hermias not only welcomed the philosophers and gave them an honoured position, but accepted their instruction and shared their studies. He even had the courage to put their ideas into practice, and found the resulting conciliatory policy perfectly satisfactory from a practical point of view.

The most eloquent witness to his philosophic nature is Aristotle himself, who, after his death at the hands of the Persians, paid honour to his memory in more than one way. He had a monument to him erected at Delphi, with an indignant quatrain recording the Persian treachery. Most valuable of all for our understanding of Aristotle himself is the eulogy which he wrote after his friend's death and cast in the form of a hymn to Aretê, Virtue. There is no reason to doubt its genuineness, and its preservation has been most fortunate. Short, isolated pieces, written in a form far removed from that by which the author is customarily known, are easy victims of the passage of centuries. It was not so often realized in antiquity as it is now that these unexpected asides are just what is needed to make our appreciation of a great and complex mind complete and truly proportioned. With due allowance for a lover's exaggeration, one may recall Browning's

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reflections on a slim volume of sonnets produced by Raphael and a single picture painted by Dante.

You and I would rather read that volume . . .
Would we not? – than wonder at Madonnas . . .
You and I would rather see that angel,
Painted by the tenderness of Dante,
Would we not? – than read a fresh Inferno.

It is not very sensible to *prefer* a painting by Dante, whose technique was doubtless mediocre, to the *Inferno*, nor a sonnet of Raphael's, who was probably no great poet, to his Madonnas. But at least we should know their minds better if we had the angel and the sonnets. What Raphael's sonnets were to his Madonnas, Aristotle's poem is to the *Physics* or the *Prior Analytics*. We know the one as a painter: if we had the sonnets, we should see him as a poet, and moreover in a more natural attitude, creating because the urge to create had arisen out of the immediate human contacts of his life. We know Aristotle as a logician and metaphysician: we see him here as a poet, and writing moreover because friendship and a sense of injustice demanded it, ignoring the dangers to which, as was proved later, so open a declaration of partisanship could lead.

The poem was preserved by Diogenes, Athenaeus and Stobaeus. The discovery of the Didymus commentary gave us another, for he also thought it worth setting down 'because it is not widely available'. Perhaps, then, the thread on which it has hung has at times been slender. It may be translated thus:¹

Arêtê, bringer of toil to the race of mortals, the fairest quarry in life, for the sake of thy maiden beauty is death itself a fate to be prized in Hellas, or the suffering of labours continued and endless. Such imperishable reward dost thou implant in the mind, reward above gold or ancestry or soft-eyed sleep. For thy sake Heracles, born of Zeus, and the sons of Leda suffered many a trial, seeking by deeds to win thy power. Through longing for thee did Achilles and Ajax come to the house of Hades, and now for the sake of thy

¹ The text may be conveniently found in the Oxford Book of Greek Verse (no. 459), Diehl, *Anth. Lyr.* 1, 101–3, Ross, *Fragmenta*, 147 or the Loeb ed. of D.L. 1, 450. For modern commentaries see Düring, *Arist.*, 15 n. 82, adding Wormell, *YCS* 1935, 62–5 (who also prints a text), and J. Crossett in *Philol. Qu.* (Iowa), 1967.

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dear beauty has the nursling of Atarneus widowed the sun's light.¹ So are his deeds a subject for song, and the Muses, Memory's daughters, will raise him to immortality, as they honour the name of Zeus the hospitable and the need of friendship unsevered.

The poem is a good one, and speaks for itself. Its sincerity is apparent, as is the exaltation of the language and the religious spirit manifested in each separate phrase, as well as the form in which the whole is cast. Both form and phrasing mark it as a hymn, a composition, that is, designed for choral singing and commonly serving a ritual rather than a purely literary purpose. This would give it from the beginning a religious significance which might escape a modern reader. It is addressed to Aretē, an abstract idea personified as a maiden goddess. Personification came easily to the Greek mind, and examples could easily be multiplied. In Homer himself (to mention a few) death, sleep, fear, justice, rumour, fate and prayers act as persons, and it remained a characteristic of the Greek religious spirit. The personification of Aretē herself was not original to Aristotle but had occurred for instance in the famous 'Choice of Heracles' of Prodicus (vol. III, 277f.).

To make so much of this may seem an exaggeration of the interest and importance of the poem, but there is a reason for it, and it is nothing to what others have done. Let us look at Jaeger:

The poem has mostly been considered as a human document only, and its irreplaceable value for the study of Aristotle's philosophical development has not been appreciated. It shows how, after the critical demolition of the Platonic Idea was complete, exact thought and religious feeling are taking different directions in his mind. Philosophically the Idea exists no longer as a reality for Aristotle as he writes these verses, but in his heart it lives on as a religious symbol, an ideal. He understands Plato's work as poetry, and just as in the *Metaphysics* he explains the Idea and the participation of the sensible world in its being as poetic metaphor, created for itself by the eye of the imagination, so it appears to him again in this poem, transfigured into the form of the maiden for whose sake it is yet in Hellas a precious thing to die.²

¹ Hicks's mistranslation at this point ('was bereft of the light of the sun') spoils the poet's effect: the departure of Hermias from the sunlight is the sun's loss more than his.

² Jaeger, *Aristoteles* (1923), 118f. It is also on p. 118 of the English ed., but the version above is one which I had made before that appeared.

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I see no reason at all for connecting the Aretē of this hymn with the Platonic Form of Virtue. She comes from the common stock of Greek religious poetry and shows – what is at least as important – that Aristotle had a deep and Hellenic sense of the divine.¹ If it meant anything at all, the coincidence with Platonism could only be an argument for seeking the origin of the eternal (but not personal) Forms of Plato in the Greek habit of expressing its emotional reaction to concepts in terms of personification. Personifications were certainly there before Plato, but there is little to be said for such speculation. All things considered, we may be content to regard the hymn as a human document only, and remain blind to its incomparable value for the study of Aristotle's philosophical development. Even to connect it, as Düring does, with the *Ethics*, hardly seems appropriate to this poetic comparison of the deeds of Hermias with those of the great heroes of old.² We have perhaps learned one thing, that although the search for philosophical development has proved its worth, it carries the risk of losing one's sense of proportion and expecting to find it everywhere. The gain in this case has been the glimpse of Aristotle in the unfamiliar guise of a poet, writing, under stress of emotion and in order to do justice to a murdered friend, something which could only bring him into disfavour with political authority. This was no imaginary danger. Once the powerful protection of Alexander was removed and Athenian feeling against Macedon allowed full play, the authorship of this poem became one of the pretexts used for bringing a charge against him, and so a direct cause of his dying in banishment.

After at most three years at Assos or Atarneus Aristotle crossed to Mytilene; not a big change, for to anyone standing (as I have done) on the acropolis of Assos the island of Lesbos is in full view. It was the home of his younger friend and collaborator Theophrastus, and place-names in the zoological works of both point to work carried on in the island. Thus their collaboration and friendship is sufficient to

¹ On personification as a mode of Greek thought see Webster's paper with that title in *J. of Warb. and Courtland Insts.* 1954. I once in a lecture amused myself by conjecturing that a hopeful student might one day aspire to a Ph.D. with a thesis on personification as the origin of the theory of Forms, only to discover that Webster had already made the suggestion in *Acta Congr. Madvig.* 1 (1958) 32.

² 'He says here in poetic language what he often emphasizes in his ethical lectures . . . "Virtue must be translated into action"' etc. (*Arist.*, 15, with ref. to *EN* 1072 h 3).

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account for the move.¹ To attribute it to the death of Hermias does not fit the chronology, the most likely dates being these: Aristotle at Assos 347-5; at Mytilene 345-3; death of Hermias 341.² In 343 he went to Macedonia at Philip's request to be tutor to his son Alexander, then a boy of thirteen.³

The plotting of Hermias against the Persians, which led to his death, was used by Jaeger as a peg on which to hang an interesting theory about Aristotle's appointment at the Macedonian court. If Philip's plans for a campaign against the Persians matured, the territory of Hermias in Aeolis would be a most useful Asiatic bridgehead and base. This Hermias was prepared to offer in return for certain pledges regarding his own security. The accounts of Didymus and Demosthenes's fourth Philippic together offer clear evidence that negotiations did take place between them. It would appear impossible (Jaeger continues) that Aristotle should be ignorant of the high political ventures of his friend and father-in-law. In 343 he went to Pella, and in 341 came discovery by the Persians and the capture and death of Hermias. It was, Jaeger concludes, on a political mission for Hermias that he crossed to the court of Philip. In support of this Jaeger cites the insufficiency of the reasons usually adduced. The prevailing view, he says, is Plutarch's, that Philip searched the world for a tutor for his son and turned to the greatest philosopher of the age; but when he was still lecturing in Assos and Mytilene, Aristotle had no such widespread reputation. Nor would the fact that his father had been physician to Philip's father carry much weight with Philip forty years later, when the friendship could scarcely have been a personal one for him.⁴

¹ When and where they first became acquainted is not known. Some like to think that Theophrastus had visited the Academy under Plato (Regenbogen, *RE Suppl.* vii, 1358), but more probably they met during A.'s Mysian sojourn. Later Theophrastus followed him to Macedonia. See Jaeger, *Aristotle*, 115 n. 1.

² For the evidence see *AABT*, 252-4.

³ The principal, though not the sole, authorities for this are Dionysius Hal., *Dion.* I, and Plutarch's life of Alexander. Plut. and some other sources will be found in the section of *AABT* covering A.'s relations with Philip and Alexander (284ff.), but Dionysius and Diogenes on pp. 252-4. The fact is generally and with good reason accepted, but for a sceptical view see Christ, *Arist.* I, ch. x.

⁴ Plut. *Alex.* 7: υπερπύματο τῶν φιλοσόφων τὸν ἐνδοξότατον καὶ λογιώτατον Ἀριστοτέλην. J. is probably right to call this an exaggeration, but Philip would not have been ignorant of A.'s achievements to date in philosophy and science. However, his personal contact with the Macedonian court and strong pro-Macedonian sympathies are generally considered sufficient to account for Philip's choice. So e.g. Düring, *Arist.*, 12; Moraux, *Liées*, 340.

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The theory is perfectly possible, and throws an interesting light on Aristotle's life and position at this time, but we can be content with the facts: in 343 he took up his new position, and in 341 Hermias was treacherously captured by a Persian general, accused of plotting against the Great King, and was either tortured and executed or died in captivity. If we may trust the encomium written by Aristotle's nephew Callisthenes, he died with a message on his lips to his 'friends and companions', that he had done nothing unseemly or unworthy of philosophy. Demosthenes rejoiced at the setback to Philip's plans.

Whatever the reason for Aristotle's new appointment, it was no doubt accepted joyfully for its own sake. To be educator to a prince was an ambition inherited from Plato which he never gave up. Some ten years earlier he had addressed a protreptic work to a Cypriot king called Themison, in which he urged on him that philosophy was the most profitable education for a monarch. Next we saw him moulding the mind of the tyrant of Atarneus with some success, perhaps because he had relinquished a little of the intransigence of what one might call romantic Platonism. Here it could possibly be significant that his abandonment of belief in the transcendent Forms—Justice and the rest—had occurred in the meantime. There would be some give and take with Hermias, who besides learning had, as Plato hoped in the Sixth Letter, something to teach.

Now came the biggest chance of all. Alexander's opportunities were limitless, and as for his own powers of response to them, that was where Aristotle himself might have some effect. The uncompromising ideal of the philosopher-king had yielded in his mind to something more practical, and united with this was his conviction of the superiority of the Hellenic race to all others, and his belief that it could rule the world if only it achieved political unity.¹ The crying need was for a man, and his new pupil was one supremely fitted, at least from Aristotle's position, to be the one. Alexander's later ideals of a community

¹ *Pol.* 7.1327b31: διόπερ ἐλευθέρων τε διατελεῖ καὶ βέλτιστα πολιτευόμενον καὶ δυνάμενον ἀρχεῖν πάντων, μᾶς τυγχάνου πολιτείας. This is a purely general statement, but that the pro-Macedonian and friend of Philip who wrote it should not have had the idea in mind when he became tutor to Philip's son is frankly incredible. No more credible is the supposition that he borrowed the idea from his enemy Isocrates. (I have in mind the scepticism of Düring, *Arist.*, 396 n. 340, which seems difficult to justify.)

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embracing Greeks and barbarians must have come as a shock to him. Meanwhile he continued to enjoy the royal favour, which included the allotment to him by Philip, for the education of Alexander, of a Nymphaeum in the Macedonian town of Mieza, to be a 'school and place of resort'. In Plutarch's day 'Aristotle's stone seats and shady walks' were still pointed out to tourists. To this time also belongs his rebuilding of Stagira and restoration of its exiles with the blessing of Alexander and Philip.¹

Alexander seems to have applied himself diligently to the programme of studies which Aristotle mapped out, but the tutorship did not last more than three years. When Alexander was sixteen, Philip went on a campaign against Byzantium, leaving him as regent, whereat he successfully carried out some minor military expeditions on his own. This must, to say the least, have seriously interrupted the hours of study, but Aristotle still stayed in the North, where we find him at the time of Philip's assassination in 336 and Alexander's accession. Now and after he returned to Athens he must have found his Macedonian friendships of great practical benefit. Most important was Antipater, the dominant figure in Greece for the next ten years. When Alexander left for his world-famous campaigns in Asia, he appointed Antipater his regent in Greece. Yet the friendship between him and Aristotle does not seem to have belonged, to use Aristotle's own classification, to the second class of friendship in which only utility is sought, but to the first or perfect kind. It was not confined to the period of Macedonia's hegemony in Greece, but lasted until Aristotle's death, though he lived to see the day when to be a friend of Macedon meant a choice between death and banishment from Athens. In his will he appointed Antipater his executor. To think of men like this – of Plato and Theophrastus, Hermias, Alexander and Antipater – and of the end of the Hymn to Aretē may help us to understand the encomium of friendship at the opening of *Nicomachean Ethics* bk 8. It was not without reason that

¹ Zeller 2.2.25 n. 3 and 27 n. 3; Moraux, *Listes*, 341. Moraux's readable account of 'A. chez Philippe' runs from pp. 339 to 343 and relies extensively (and I should say justifiably) on Plutarch. He has no doubts about the rebuilding, nor had Zeller. Düring calls the story doubtful (*AABT*, 359), and Mulvany was thoroughly sceptical (*CQ* 1926, 163). Further authorities are in *AABT*, 290ff., and the story also occurs in the *Vitae* on pp. 100, 132, 153. His extract from Plut. *Alex.* is on p. 184. (How one longs for an index to this indispensable, but in parts curiously arranged, collection of material!)

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Aristotle spoke of it there as not only the most necessary thing in life, but a thing of beauty besides; 'for without friends no one would choose to go on living, though he possessed every other good thing'.

In the spring of 334 Alexander crossed over to Asia as the champion of Hellas and a second Achilles. With him went a band of writers and philosophers, among whom was Aristotle's nephew and pupil Callisthenes. Unfortunately Callisthenes not only opposed the conqueror's wish that Greeks too should do obeisance to him in the Persian manner, but was suspected of being involved in a conspiracy, and was either put to death or died from the effects of imprisonment. This may have cast a shadow over the later relations between Alexander and his former tutor, but even if it made him an unpopular figure in the eyes of later Peripatetics, the effect on Aristotle himself may not have been so great. His own verdict on his nephew was that the boy was certainly a powerful talker, but had no sense. He certainly lacked tact, if the story is true that he more than once quoted to the King the line of Homer, 'Even Patroclus died, a far better man than yourself'.¹

Aristotle himself returned to Athens, after an absence of thirteen years. Speusippus had died in 339 and Xenocrates had succeeded to the headship of the Academy. Aristotle began to teach independently in the Lyceum, the gymnasium of the precinct of Apollo Lykeios. This, like the Academy, was a public place where sophists and rhetors would gather their pupils around them, and it had been a favourite haunt of Socrates.² Each would have his chosen gymnasium and his favourite covered walk within it, where he could always be found. No more than that is implied by the words of Hermippus (*ap. D.L.* 5.2) that 'he chose a public walk (*peripatos*) in the Lyceum, where he would walk up and down discussing philosophy with his pupils until it was time for their rubbing with oil'. Until recently it was taken for granted that he soon founded a school (in a physical sense) in a nearby group of buildings,

¹ Plut. *Alex.* 53 and other authorities in *AABT*, 294ff. Cf. T. S. Brown, 'Callisthenes and Alexander', *AJP* 1949. The 'Peripatetic' portrait of Alexander is controversial. See *reft.* in Lynch, *A's School*, 138 n. 9. But Theophrastus did give rein to his feelings in a tract called 'Callisthenes, or On Grief' (*D.L.* 5.44), in which he described Alexander as a man who did not understand the proper use of success ('ignarum quemadmodum rebus secundis uti conveniret', Cic. *Tusc.* 3.10.21). Chroust's 'A. and Callisthenes of Olynthus' (in his *Arist.* 1) is a general life of C. with special reference to his relations with A. and Alexander.

² Cf. the beginning of Plato's *Euthyphro* and Adam's note on p. 28 of his edition.

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and that its customs were modelled on those of the Academy, with its cult of the Muses and 'common life' (τὸ συζῆν), including common meals and parties (*syssitia* and *symposia*) conducted according to definite rules of procedure. That such 'rules for symposia' were drawn up by Aristotle himself is recorded more than once. (See vol. IV, 21 n. 1.)¹ Here there were rooms fitted up for teaching and research, and a library. The evidence for this is the will of Theophrastus, which provides for the disposal of the buildings, including a temple (containing a statue of Aristotle), and a garden and houses. Brink, however, has argued (*RE Suppl.* VII, 905) that this property had nothing to do with Aristotle himself, but was granted later to Theophrastus by Demetrius of Phalerum. This rests partly on the absence of any reference to the disposal of such property in Aristotle's own will and partly on a sentence in Diogenes's life of Theophrastus, which says only (5.39) 'He is said to have possessed a garden of his own after Aristotle's death, obtained for him by Demetrius of Phalerum who was his friend.' Brink regards this as contradicting the notion that Aristotle had a school in any physical sense, and adds that though legally a metic could not without a special dispensation own property in Athens, the granting of it to Theophrastus of Lesbos was an exception due to the favourable political circumstances. But if this was possible for Theophrastus, it was possible for Aristotle, and no political circumstances could have been more favourable than the period when his friend Antipater was Alexander's regent in Greece.²

Düring accepts Brink's arguments but goes further. According to him Aristotle founded no school even in the non-physical sense of a community of philosophers. The picture is indeed pathetic: 'He died relatively young, without a school and with few intimate pupils, a

¹ As an example of Düring's determination to deny A. a school, one may cite the unsupported assertion (*Arist.*, 480 n. 320) that his νόμος συσσιτικός (or νόμος συσσιτικός) mentioned by D.L. (5.26) concerned the origin of common meals as a social institution in Italy, Crete and elsewhere. (Contrast Moraux, *Lister*, 129.) He is also driven to claim that Hermippus (3rd cent. B.C.) did not know that the Lyceum was a public gymnasium (*AABT*, 406).

² On ἐγκτήσις see Lynch, *A's School*, 98f, and n. 47. On p. 125 n. 27, he notes that it was not hereditary, which if A. held the property under this provision, could account for the omission in his will. A difficulty remains, however, if as Lynch says (p. 98), ἐγκτήσις was the right granted to Theophrastus also. See too Gottschalk, 'The Ownership of the School', *Hermes* 1972, 328-35. There seems no reason to doubt the genuineness of the wills of A. and his successors preserved by D.L., which Gottschalk discusses in the same article, which covers pp. 314-42.

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lonely man.¹ The Peripatetic School was not founded by Aristotle, as everyone in ancient and modern times has thought, but by Theophrastus.²

This surprising thesis can hardly outweigh the case for the traditional view.³ Aristotle not only taught, but carried out scientific research (including dissections)⁴ and amassed a large library. Strabo called him the first known collector of books, and if this can hardly be literally true,⁵ it probably means that he was the first to establish a library in the full sense of a properly arranged collection in its own special building. Buildings there must have been, for books, specimens and equipment could not have been housed in a public gymnasium. Since a metic could hire a house to live in, he could surely have the use of other buildings too. Perhaps then, as Jaeger said, the property granted to Theophrastus was the one in which Aristotle had taught, though in fact Diogenes speaks only of 'a garden of his own'.

Demetrius of Phalerum, who was in his late twenties when Aristotle died and was afterwards in charge of affairs at Athens for ten years, was a member of the Lyceum. Later he was forced to take refuge in Alexandria, where he became an adviser to Ptolemy Soter, and it was evidently through him that, as Strabo puts it, Aristotle 'became the instructor of the kings of Egypt in the arrangement of a library'. His own became the pattern for the famous one in the Alexandrian

¹ *Arist.*, 35 and cf. 14. The 'loneliness' is based on the extract from a letter to Antipater (fr. 668 Rose) which he mentions on p. 14 n. 81. This runs: 'As I become more solitary and turned in on myself, so I have grown more fond of traditional stories' (φιλομυθότατος). Plezia's suggestion, adopted by Allan (*Mnemosyne* 27, 113-12), that the sentence is intended as a 'jest', seems to me a most unhappy one. *χάρις* has many meanings, and Demetrius (our source, probably of the 1st century A.D.) need not have used it here as he used it in an earlier passage (Allan, *loc.*, 122 n. 8), nor have been right if he did. That A.'s very human remark has a certain *χάρις* (charm) I should be the first to agree. It may have been written during his last year at Chalcis. Incidentally Thomas Mann wrote that 'Whereas in the life of mankind the mythical represents an early and primitive stage, in the life of the individual it represents a late and mature one.'

² Düring, *AABT*, 346, 361, 461, *AGP* 1966, 314 and *Arist.*, 33; Flashar, *Articles on A.*, 2, 13. I feel more sympathy with von Arnim, who simply wrote 'when A. had founded his school at Athens in 335 ...', as if no further evidence were necessary than the date of his return (*Hermes* 1928, 104). So also Moreau, who only adds (no doubt rightly) that the new school 'n'était pas une fondation comparable à celle de Platon' (*A. et son école*, 259).

³ It is preserved in essentials by Lynch, *A.'s School*, 96ff., who at the same time takes account of the handicap of the metic status of A. and Theophrastus.

⁴ The evidence for dissections is collected in L. Bourgey, *Obs. et Exp.* 84.

⁵ We hear of Euripides and earlier figures as book-collectors (Ath. 1.32) and from an unimpeachable contemporary source (Xen. *Mem.* 4.2.1) of Euthydemus the friend of Socrates.

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Mouseion. The *Mouseion* was on the royal estate, and besides its name, had other features borrowed from the Academy and Lyceum, namely a *peripatos* and a large house containing the common dining-room (*syssition*) of the scholars;¹ and the Alexandrian library in its turn became the model for that of the Attalid kings of Pergamum.

In the Lyceum Aristotle continued his scientific researches and gave oral tuition. Of his teaching methods Aulus Gellius has handed down an interesting account.²

The lectures of the philosopher Aristotle, the teacher of Alexander, and the accomplishments which he imparted to his pupils, are said to have been of two kinds. Some were called *exoteric*, some *acroatic*.³ The name *exoteric* was applied to rhetoric, the cultivation of a quick wit, and education in civics. *Acroatic* on the other hand were works concerned with more arcane and exact philosophy, with the investigation of nature and with dialectical discussion. In the Lyceum he devoted the morning to the *acroatic* subjects and did not allow anyone to attend without assuring himself of their ability, educational grounding, keenness to learn and willingness to work. The *exoteric* lectures and speech-classes he held in the same place in the evening, and opened them to any young men without restriction. This he called his 'evening walk', the other the early one, for at both times he walked as he talked. His books also, treatises on all these same subjects, he divided similarly, calling some *exoteric* and others *acroatic*.⁴

The atmosphere of the school seems to have been more scientific, in the modern sense, than philosophical, though in this Aristotle may have been following according to his own bent a lead already given in the Academy. (Cf. vol. v, 463f.) The sciences of observation were encouraged, and pupils were set to preparing the basic collections of material on which the inductive method could be practised. Aristotle himself had amassed an enormous amount, and his notebooks would be at the disposal of others undertaking particular lines of research. Single subjects were allotted to different assistants, e.g. botany to

¹ See Strabo 13.608 and 17.793-4.

² *Noct. Att.* 20.5, *AABT*, 431. Gellius was a Roman of the 2nd cent. A.D., who lived for a time in Athens, to pursue his favourite study, philosophy. His preceptor was a noted Platonist of the time, Calvisius Taurus.

³ ἀποερητά, i.e. he listened to (more commonly *acroamatic*). Thus the Greek title of what we know as the *Physics* is φυσικὴ ἀκρόασις, 'Lecture-course on nature'.

⁴ The meaning of *exoteric* as applied to writings needs a little separate consideration. See pp. 50-2 below.

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Theophrastus,¹ medicine to Menon, and to Eudemus of Rhodes the history of the exact sciences, arithmetic, geometry and astronomy. To this type of work belongs the great collection of descriptions of various political systems, 158 in all, an invaluable tool for the political scientist. The rediscovered *Constitution of Athens* formed the first book of the series, and is generally believed to be one of those written by Aristotle himself.²

The attention paid to minutiae, and the conscientious amassing of detailed information, sometimes, it must have seemed, for its own sake, was far removed from the atmosphere in which most philosophers had hitherto been accustomed to work. More accurately perhaps it represented an Ionian strain strongly opposed to the Socratic, and it looks as if Aristotle's helpers needed occasional encouragement to keep them from flagging in their arduous and sometimes uninspiring tasks. Such encouragement is offered, for instance, in a famous passage of the work *On the Parts of Animals* (645 a 5-17):

It remains to treat of the nature of living creatures, omitting nothing (as far as possible), whether of higher or of lower dignity. For even in the case of creatures, the composition of which is disagreeable to the sense, Nature, who fashioned them, nevertheless affords an extraordinary pleasure to anyone with a philosophic disposition, capable of understanding causes. We take delight in looking at representations of these things, because we observe at the same time the art of the painter or sculptor which created them;³ and it would be strange and unreasonable that the contemplation of the works of Nature themselves should not yield a still greater satisfaction, when we can make out their causes. Accordingly, the consideration of the lowlier forms of life ought not to excite a childish repugnance. In all natural things there is something to move wonder.

What a long way we have come from the Socrates of the *Phaedo*, who

¹ Theophrastus's two treatises on plants have survived, but A. also wrote one himself. See the ref. to it in Bonitz's *Index*, 104 b 38-44. For Menon see Zeller 2.2.897 n. 2.

² The fragments of the *Constitutions* are in Rose, *Arist. Fragm.*, pp. 258-367. See also Jaeger, *Aristotle*, 327 (especially for the date of *Ath. Pol.*, ib. n. 1), and Düring, *Arist.*, 476f. Editions and translations of *Ath. Pol.* include Kenyon's text in the Oxford series (1920 and reprints), Mathieu and Haussoulhier in the Budé collection (2nd ed. 1941), Tovar (with Spanish translation, Madrid 1948), von Fritz and Kapp (N.Y. 1950), and Oppermann (Teubner 1928). There is no mention of the collection in the *Politics*, but there are two in the *Ethics* (p. 333 below).

³ One is reminded of some of Dürer's engravings. The companion found its way into a very different work, the *Poetics*. See 1448 b 10-12.

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turned away in despair from the natural world to seek the truth in *logoi*! Yet may not Plato himself, whether intentionally or not, have sown the seed which flowers here in Aristotle's differently constituted mind? At a later stage he too had insisted (*Soph.* 227b) that no considerations of value or dignity should invade the province of scientific classification. As species of the generic art of hunting, generalship and delousing stand on the same level. The only difference is that the general (a hunter of men) is more conceited.

This anticipation of the learning and science of Alexandria, as Jaeger saw it, was believed by him to constitute the whole of Aristotle's original work in this last period. Burnet, however, soon after Jaeger's book appeared, maintained that this was not the whole truth; there was evidence that Aristotle was contemplating a revision of his whole system when his early death intervened, and a closer study of his thought in these years might reveal a conception of philosophy not so far removed from Plato's after all. On the latter point later work has tended to substantiate his provisional view, and it will probably be reflected in this book.

The final period of work in Athens lasted for twelve years. Confident that his friends were the ruling power in Greece, and with the conqueror of Asia to assist and subsidize his scientific work,¹ Aristotle

¹ If this crosses the border into the 'Aristotelian legend', so be it. For Jaeger (*Aristotle*, 330) the *Historia Animalium* would not have been conceivable without a knowledge of discoveries made by Alexander's expedition concerning the habits of elephants and other animals unknown in Greece. (It should be noted, however, that in the *H.A.* made critical use of written authorities. He three times mentions Ctesias as his source of information on India and its fauna.) Financial support from Philip and Alexander is mentioned by Aelian and Athenaeus, and Pliny speaks of specialists put by Alexander at A.'s disposal—experts in hunting, fishing, and bird-catching, herdsmen, keepers of vivaria and aquaria, apiaries and aviaries. Exaggeration (Athenaeus mentions 'rumours of 800 talents', Pliny 'thousands of men') need not mean total falsehood. Düring has noted (*AABT*, 288) that at various places in the *H.A.* mentions types of informants remarkably similar to those in Pliny's lists: fishermen, hunters, herdsmen, bird-catchers, bee-keepers. This is interesting but might tell either way, or neither. See also Düring's *Arist.*, 52f., on A.'s use of oral or written information in addition to personal observation.

Düring (*Arist.*, 523) dismisses Pliny's story as 'naturally' Hellenistic invention. It is to be feared that he and Jaeger have both been influenced by their preconceived views of the date of A.'s zoological investigations. Because his relevant writings include Lesbian, Anatolian and Macedonian place-names, D. assumes that practically all his work in this field was carried out before his return to Athens (*AABT*, 289, *Arist.*, 523; D'Arcy Thompson's remarks would encourage him in this view, pp. 29–30 above). J. on the other hand accepts Alexander's interest as proof of his general thesis that A.'s detailed scientific work, 'the point of his greatest distance from the philosophy of Plato', belonged to the last few years of his life. Yet obviously neither argument

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must have found it a happy time as he went about the daily work of the School, spending the mornings with stimulating pupils and younger colleagues like Theophrastus, Eudemus, Meno, Aristoxenus and Dicaearchus, and holding forth in the evenings to audiences of ambitious young men eager to learn the secrets of political success. The sudden shattering of his security, and the world-shaking event which caused it, must have been all the more terrible. When in the summer of 323 the news of Alexander's death reached Athens, many refused to believe it. He was thirty-two. Then in September eye-witnesses reached the city and doubt was no longer possible. The Assembly decided on immediate war with Antipater and the liberation of Greek cities from his garrisons. It was not his fault if at such a time his friends had to shift for themselves, and an excuse was soon found for harrying Aristotle. A charge of impiety (*asebeia*, the old complaint against philosophers) was laid against him, instigated most probably by a high religious official, Eurymedon the hierophant, and its pretext was his relationship with the pro-Macedonian Hermias. Thus was religious zeal neatly reinforced by political animosity. Had not Aristotle written a poem in honour of Hermias, and was it not in the form of a hymn or paean? Aristotle then was guilty of writing a hymn to a mortal as if he were a god, and, as they added for the sake of artistic verisimilitude, of singing it every day at dinner. Luckily we possess the poem in question, and can judge the justice of calling it a hymn to Hermias when it is addressed to Aretē, among whose servitors Hermias is numbered along with Achilles and Ajax and other heroes of old. There was also a story, which may have formed part of the legal charge, that after his wife Pythias died, Aristotle sacrificed to her 'as the Athenians do to Demeter'.¹

Not only Athens but the whole of Greece was in revolt against Antipater, and Aristotle had to submit to other petty indignities which

proves that A.'s zoological work belongs *exclusively* to one period or the other. Allan (*Phil. of A.*, 99) can only object that even if it is true that Alexander agreed to provide the Lyceum with information about animals in the newly conquered territory, 'there would scarcely have been time for his offer to bear fruit'. Between 334 and 323?

¹ See D.L. 5.6 and Hermippus *ap.* Ath. 15.696a-b (*AABT*, 278). The speaker in Athenaeus argues that the poem is not a paean at all, but of *akolion* type. For the *asebeia* charge see Zeller, 2.2.38 n. 1. The story about Pythias is attributed to Lycon the Pythagorean, probably a younger contemporary of A. See Eusebius (*Aristocles*) and Théodore in *AABT*, 374 and 381. Wormell describes and comments on the whole business in *YCS* 1935, 83-7.

must have helped to embitter his last year in exile. The Delphic priesthood had earlier erected a stele at Delphi decreeing honours to Aristotle and Callisthenes in consideration of their services in compiling a record of all Pythian victors and the organizers of the games. This was hardly a service whose value could be altered by political changes, yet when, some five months after Alexander's death, Phocis allied itself with Athens in opposing Antipater, the Delphians were not above cancelling the honours which had been its reward. There is a note of weary resignation in the letter which he wrote to Antipater about the business: 'Concerning the honours voted to me at Delphi, of which I have been deprived, I have now reached a stage when I don't greatly mind about them, and yet I cannot say I don't mind at all.' Under pressure of the odium of the *asebeia* charge Aristotle took the inevitable step and abandoned Athens. His retreat was at Chalcis in Euboea, where there was some property belonging to his family on his mother's side. He had with him now Herpyllis, a freedwoman with whom he had been living after the death of Pythias. She remained with him till his death and was probably the mother of his son Nicomachus.² In his will he provides in detail for her future, and testifies to her loyal affection. In Chalcis he had lived no more than a year when he died in 322, in his sixty-third year.

Additional note: Aristotle and mathematics

On Aristotle's mathematical abilities diametrically opposite opinions have been held. For Burnet, 'He was not a mathematician like Plato.' 'There is no evidence that he was ever capable of appreciating the strictly mathematical point of view.' He rejected the theory of Forms, 'which he was too little of a mathematician to understand fully' (1), and his own astronomical and physical theories 'could never have been seriously maintained by anyone who knew anything of the mathematics even of those days'. Field's view was similar. Ross on the other hand

¹ The stele (*SIG* 3, 275) was discovered during excavations at Delphi in 1895; text and comment in *AABT*, 339. Even Düring, whom no one could call a credulous scholar, thinks the letter 'could be genuine', and, if a fiction, is 'a very clever fiction indeed'.

² *Pace* Düring, *AABT*, 266. Aristocles (*ap. Eus.* 15.2, *AABT*, 376) says that he duly married her, but this is disputed - one of those academic debates into which it hardly seems worth while to enter. For an exhaustive discussion of the relationship between A., Herpyllis and Nicomachus, see Mulvany, *CQ* 1926, 157-60, and Düring's comments, *AABT*, 269f.

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gave reasons for thinking 'that he had a more mathematical turn of mind than he is usually credited with'. He cites his discussions of the presuppositions of science and of the problem of continuity in *Phys.* 6, and thirdly *Met.* 1051a21-33, 'in which he anticipates Kant's doctrine that the construction of the figure is the secret of geometrical discovery'. Ross concludes: 'He did not make original discoveries; but few thinkers have contributed so much to the philosophical theory of the nature of mathematics.' The verdict of Sir Thomas Heath, who as the historian of Greek mathematics and writer of *Mathematics in Aristotle* (1949) had a better right to speak than most, was lukewarm: 'He was evidently not a mathematician by profession, but he was abreast of the knowledge of his day as far as elementary mathematics is concerned; and the historian of mathematics can glean from his treatises valuable hints as to the content of the textbooks in use immediately before the time of Euclid.' On the whole, more recent opinion has tended to swing in Aristotle's favour. J. Barnes, for instance, in 1969 writes of 'the old slander' that Aristotle was no mathematician, and according to Düring the geometrical constructions with which he explained optical phenomena in the sky in *Meteor.* 3.3 display his 'sovereign mastery' of contemporary mathematics.¹

However, it is not so much Aristotle's ability that is of interest as his opinions about the proper place of mathematics in the whole field of science and philosophy. In a judicious summing-up, Düring makes both the essential points: that Aristotle was mathematically competent and that at the same time he rejected any explanation of natural processes that had a mathematical basis. He disapproved of the hold that mathematical principles had obtained over the conclusions of philosophy in general. He himself was a student of nature at first hand, a *physicus*, seeking for causes and explanations through observation of natural objects both animate and inanimate; and whereas the prevailing trend among his acquaintance was to regard the objects of mathematics – numbers, points, lines, planes, solids – as the ultimate elements

¹ Reft, for this para.: Burnet (i) *Br. Ac. Lecture* 1924, 12 and 8, (ii) *Platonism*, 61 and 62; Field *P.'s C.*, 203; Ross, *Phys.*, 70 and *Analytics*, 19; Heath, *Maths in A.*, 1; J. Barnes, *Phron.* 1969, 127f.; Düring, *Arist.*, 393. K. Berka ('A. und die axiomatische Methode', *Das Altertum* 1963) combats the view that A. had no great understanding of mathematics and that the axiomatic method is due to Euclid.

or first principles of the natural world, he could only suppose that, like the Pythagoreans (*Met.* 1090a32, p. 2 above), his colleagues were thinking of some other world, not the one we know. Arithmetic (or rather number-theory) and geometry 'did not deal with realities' (*Met.* 1073b6-8). True, this illegitimate irruption of mathematics into natural science did not prevent him from applying his own mathematical talent to questions of method and the logical structure of the demonstrative sciences, as many have pointed out with reference to the first book of the *Posterior Analytics*. Leibniz remarked that Aristotle was the first to think mathematically in fields outside the strictly mathematical, and Ross, Owen and Barnes have made the same point in the same context of *An. Post.* 1.¹ One might notice also how naturally the mathematical illustration springs to his mind even when he is speaking of the principles of ethical theory (*EN* 1151a15-19), to which he explicitly denies the name of exact science. Nevertheless mathematics found no place in the mainly empirical and classificatory sciences which chiefly interested him, the fields of natural history and especially biology which he did so much to set on their feet as scientific disciplines and which constitute his chief claim to fame as a scientist. This was not due to any lack of comprehension on his part. It is amusing to find him condemning Plato's geometrical construction of matter in the *Timaeus*, not only for its uselessness to natural philosophy (which is concerned with facts 'as continuously and correctly presented through the senses' and cannot tolerate a concept like that of triangles suspended in space), but also as contrary to the principles of mathematics! The theory, he objects, demands the existence of indivisible magnitudes, which mathematics, 'the most exact science', does not allow.²

For himself, however, the characteristic marks of nature were movement and change, and on these topics the static abstractions of the mathematician had nothing to contribute.³ 'Mathematical accuracy is

¹ Düring, *Arist.*, 269; Ross, *Analytics*, 59; Owen, *Proc. Brit. Ac.* 1965, 140; Barnes, *Phron.* 1969, 127f. (revised repr. in *Articles on A.* 1, 69f.).

² *De caelo* 3 ch. 7, esp. 306a26ff. The objection may have been unfair, but through misrepresentation of Plato, not through ignorance of mathematics. See Loeb ed., p. 317 n. (b).

³ On A.'s conception of mathematics and its objects see further pp. 132f. below. In view of the triumphs of modern mathematical physics, many may be inclined to agree with Solmsen that

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not to be demanded in all things but only in those which have no matter. The method is therefore not a physical one, for all nature, I take it, has matter.'¹ 'In the field of what is unmoved there cannot be this kind of cause [*sc.* the final-efficient], which is why in mathematics nothing is proved by its means.' Aristotle had much in common with the nineteenth century. He would have agreed with J. S. Mill's criticism of his father, that he, 'though right in adopting a deductive method, had made a wrong selection of one, having taken as the type of deduction, not the appropriate process, that of the deductive branches of natural philosophy, but the inappropriate one of pure geometry, which not being a science of causation at all, does not require or admit of any summing-up of effects'. (World's Classics ed., 136.) What stimulated Aristotle, unlike Socrates, was the goal-directed activity of a growing tree. In *EN* 6 (1142a7f.) he goes so far as to say that a child can become a mathematician but not a wise man or a natural scientist. At the same time he was fully alive to the aesthetic appeal of the elements of order, symmetry and limit which, following Plato, he saw as the chief forms of beauty, which the mathematical sciences display most conspicuously. Beauty is not the same as goodness, and may be observed in what is unmoved as well as what is moved.²

'The historian of science may justifiably regard the decision which cuts off physics from mathematics as a "fatal step"', even though A. cannot be solely blamed for the lapse of 2,000 years before the breach was healed. Students of the contemporary situation, on the other hand, may prefer to accept Allan's judgement that A.'s distinction between the procedures of mathematics and physics 'was probably necessary in view of some of the fantasies of Pythagoreans and Platonists'. (Solmsen, *ASPH*, 261, and cf. *Symp. Ar.* 3, 225; Allan, *Phil. of A.*, 154.)

¹ *Met.* 995a14-17. Cf. 996a27-30.

² *Met.* 1078a31 ff. Cf. vol. V, 226 n.3 and Plato, *Phil.* 64c, *Tim.* 87c, *Rep.* 531c: the study of what numbers are concordant and what not – in the abstract, not connected with audible music – is 'useful in the search for what is beautiful and good, but useless when pursued from any other motive'. The distinction between τὸ ὄναι and τὸ καλόν is a purely Aristotelian touch.

III

THE WRITTEN REMAINS

(1) *Introduction: the surviving works*

Plutarch reports an exchange of letters between Alexander and Aristotle. Let us indulge ourselves by reading them in the attractive, though somewhat expansive, translation of North.¹

It is thought also that Alexander did not only learn of Aristotle, moral philosophy and humanity, but also heard of him other more secret, hard and grave doctrine, which Aristotle's scholars do properly call *Acroamata* or *Epopica*, meaning things speculative, which requireth the master's teaching to understand them, or else are kept from common knowledge: which sciences, they did not commonly teach. Alexander being passed into Asia, and hearing that Aristotle had put out certain books of that matter: for the honour's sake of philosophy, he wrote a letter unto him, somewhat too plain, and of this effect, 'Alexander unto Aristotle greeting. Thou has not done well to put forth the acroamatical sciences. For wherein shall we excel other, if those things which thou has secretly taught us, be made common to all? I do thee to understand, that I had rather excel others in excellency of knowledge, than in greatness of power. Farewell.' Wherunto Aristotle, to pacify this his ambitious humour, wrote unto him again, that these books were published, and not published. For to say truly, in all his treatises which he called *μετὰ τὰ φυσικά* [metaphysics]: there is no plain instruction profitable for any man, neither to pick out for himself, nor yet to be taught by any other, save Aristotle himself, or his scholars.

¹ Plut. *Alex.* 7 (*AABT*, 284), trans. North. The letters are also quoted by Aulus Gellius after the passage on p. 41 above. He says that they come from 'the book of Andronicus', the first editor of A. (p. 61 below). 'Probably faked by Andronicus', says Düring drily, and elsewhere 'obviously fictitious' (*AABT*, 286 and 432; for his justification for imputing this conduct to an admittedly conscientious scholar, to whom we owe practically all of A. that we possess, see p. 434). In Gellius the words 'for they are only intelligible to those who have heard us' are included in A.'s letter. The final comment in Plut. is more accurately translated thus: 'For in truth his treatise on metaphysics is of no use for those who would either teach or learn the science, but is written as a memorandum for those already trained' (Perrin, quoted in *AABT*, 429). Düring (*AABT*, 286) finds it difficult to believe that this observation is based on first-hand knowledge of the *Metaphysics*. Some undergraduates might disagree. Hobbes went further (*Leviathan*, ch. 46): 'And indeed that which is there written is for the most part so far from the possibility of being understood, and so repugnant to natural reason that whosoever thinketh there is anything to be understood by it must needs think it supernatural.'

The written remains

Genuine or not, these letters draw attention to an undoubted fact. Within the works of Aristotle there were two main divisions, those intended for use within the School and not for publication, and a series of literary compositions intended to reach a wider public. By a curious trick of fate (see pp. 59ff. below), the bulk of the Aristotelian writings which have come down to us consists of the school-papers and not the published works; and it needs to be emphasized that he was constantly working on this material, revising, adding or simplifying in collaboration with his colleagues. Internal signs of revision and insertion are obvious, and one may just mention here that his ethical work exists in three versions, known respectively as the Eudemian, the Nicomachean and the Great Ethics (*Magna Moralia*, 'Ἠθικὴ μεγάλη), or as Düring once characterized them: 'one edited by Eudemus, another and later edition showing the state of these lectures at Aristotle's death, possibly edited by his son Nicomachus, and finally the much later, abridged version called the 'Ἠθικὴ μεγάλη'.¹

The surviving works are commonly referred to collectively as 'the lecture-manuscripts', but seem to fall into two main classes, with perhaps a third of lesser extent and importance. Together they form a unique record of Aristotle's work as a teacher and researcher.² First come the manuscripts from which he lectured to his advanced pupils, or perhaps even occasionally the notes taken by a pupil. A scholiast on bk A of the *Metaphysics* says that it was commonly believed to be by a pupil called Pasicles, nephew of Eudemus, but Alexander thought it Aristotle's. Ross suggested that this fragment of a book might consist of Pasicles's notes of Aristotle's lectures. This instance raises the vital question of the genuineness of the corpus, on which much careful research has been carried out. The extreme views of Göhlke (*every* work is by Aristotle) and Zürcher (*none* is by Aristotle) have not been

¹ *Transmission*, §8f. The date of the *MM* is disputed, but the present point is simply the existence of these three versions. Düring himself changed his mind, to the disapproval of his reviewer Solmsen (*Gnomon* 39, 657-72).

² I shall in future refer to them collectively as the 'school-writings'. No ideal English expression suggests itself. (Germans use *Lehrschriften*, French-language writers *œuvres scolaires*.) 'Esoteric' might seem the natural complement to 'exoteric' but (a) it does not occur until Lucian and Galen, and (b) it misleads by suggesting deliberate secrecy. They were of course only for the talented and prepared. See Aul. Gell. on p. 41. For some general indications that the lecture-notes were A.'s own, see Jackson in *J. Philol.* 1920.

The surviving works

generally supported, nor have reviewers favoured the more recent attempt of Grayeff to show that Aristotle only wrote the exoteric works and the whole corpus is the work of the School, covering some 250 years. Moraux has criticized the extremists, and we may accept his more moderate view:

The corpus aristotelicum presents itself to the critical reader as, in the main, a fairly homogeneous whole. Nevertheless certain pieces within it seem to be inauthentic. By and large one can say that modern scholars agree in regarding a large number of treatises as authentic; several others are almost universally held to be un-Aristotelian; doubt in fact only remains over a few works or parts of works. Thus the authenticity of the *Magna Moralia*, the *Eudemian Ethics* and bk K of the *Metaphysics* remains disputed.

Düring, after discussing some stylistic curiosities in the lecture-manuscripts, sums up thus:

The conclusion that we can draw is extremely important, and does not depend on the correctness or otherwise of our explanation of the addition in a particular case: the writings preserved in the corpus must in the first place have been copied from Aristotle's original manuscripts, by an editor who took the greatest pains to preserve everything, even what was written in the margin or on separate slips. Additions either in expression or form un-Aristotelian are very rare. Anyone familiar with Aristotle's writings must confirm that the editor went about his work with the utmost *pietas*.¹

I shall not return to this subject, and the rest of the volume will be based on the general consensus of ancient as well as modern times that in the surviving corpus we possess what we need not hesitate to call genuine 'acroamatical' works of Aristotle.

It is sometimes difficult to tell whether we are reading lecture-notes or memoranda for use in Aristotle's or his pupils' research. Düring judges, for instance (*Arist.*, 291f.), that the notes comprising book 7 of the *Physics* are 'rather a memorandum for his own use than the ms. of a lecture'. This brings us to a second class of school-writings of which we have some examples, consisting of collections of factual material on

¹ References: Ross, *Metaph.* 1, 213 (for *Psaricles*); Moraux in *A. in der neu. Forsch.*, 68f., where ref. for Göhlke and Zürcher and their earlier critics will be found; F. Grayeff, *A. and his School* etc. (1974), and his reviewers Zekl (*AGPh* 1976, 64-70) and Evans (*JHS* 1976, 85f.); (P. Louis in *R. de Philol.* 1976, 297f. is more favourable); Düring, *Arist.*, 35. The whole of his section on 'the special character of A.'s works' (from p. 32) is helpful.

The written remains

various subjects to serve as a firm basis for systematic treatises or lectures in both theoretical and practical sciences. Such were the compilations of laws and political constitutions,¹ of which Aristotle himself says that they will be useful to those already capable of judging questions of relative value and appropriateness; to go through them without such capacities will not of itself impart good judgement. His own task will be 'to work out from the collected constitutions the sort of elements which preserve or ruin a society and the reason why some are well and others badly governed'. Such too was the anthology of rhetorical manuals or *technai* from Tisias onwards, combined with a commentary on them by Aristotle himself which Cicero declared to be of more use than the manuals themselves (*De inv.* 2.2.6, Ross, *Fragmenta*, 1). The best surviving example of work of this kind is in a different field, biology. The *Historia Animalium* is a mine of physiological and anatomical information about all sorts of beasts, fish and birds, on which are based the theories expounded in the biological treatises which we also possess, on the reproduction, movements and bodily parts of animals. In a work of this nature authorship is naturally hard to determine with certainty, but scholarly criticism would vouch for it that at least books 1-6 and part of 8 were written by Aristotle, though with a number of additions made in the Peripatos, and that 7, 9 and 10 are later.²

These are the main divisions, but there was a third, represented for us by the *Problems*. Though the existing collection is post-Aristotelian,³ it is known that Aristotle himself amassed such series of questions under the same title *Problemata*, and what we have is a Peripatetic work following his practice and doubtless incorporating some of his material. The questions are ordered by subjects, and follow a stereotyped pattern, beginning with 'Why . . . ?' and intro-

¹ τῶν νόμων καὶ τῶν πολιτικῶν αἱ συναγωγαί, *EN* 1181b 7ff. Cf. II. 17-20. Now lost except for the *Constitution of Athens* (see p. 42 with n. 2 above and 333f. below). They were arranged in alphabetical order (Moraux, *Listes*, 115f.). Theophrastus may have been responsible for the laws (see Cic. *Fin.* 5.4.11) and pupils must have helped with the 158 constitutions. According to Cicero (*Ad Att.* 2.2) Dicaearchus wrote on those of Athens, Corinth and Pellene.

² For further details see Peck, Loeb ed., liii-lviii; Düring, *Arist.*, 506-9 and *RE Suppl.* XI, 259 and 314. Louis in the Budé edition is unusual in claiming that only bk 9 is spurious.

³ Düring, *Arist.*, 296, referring to the work of H. Flashar, *Arist.: Problemata physica*, Berlin 1962.

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ducing a possible answer or answers with the words 'Is it because . . . ?' It looks as if Aristotle continued the Academic practice parodied by Epicrates. Plato's pupils are there set a question of biological taxonomy, and after a little time for thought, each has to express his opinion in turn. The detail is comic, but the practice must have been real, and would naturally give rise to written collections of questions on various subjects, of which the *Problems* attributed to Aristotle would be the only surviving example.'

(2) *The lost literary compositions*

Such are the contents of the Aristotelian corpus which we possess; but Aristotle was not less concerned than Plato to promulgate his thoughts more widely through a series of works intended for a reading public. As Bernays remarked over a century ago (*Dialogue*, 1), no writer whose work we possess in comparable bulk is revealed to us so one-sidedly as Aristotle. Massive as they are, the two quarto volumes of the Berlin edition do not present us with an author, in the strict sense of one writing for the enjoyment or instruction of an educated public, whether general or restricted, and considering his readers' needs. Rather we watch a thinker writing for himself alone, with no thought of a reader. Yet Aristotle himself mentions both 'published'¹ and 'popular' ('exoteric') works, the latter in two places as definitely his own.

Pol. 1278b30. It is easy to distinguish the recognized modes of government; indeed² we have often classified them in the exoteric *logoi*.

EE 1218b34. There are external goods and goods of the soul . . . a distinction which we also draw in the exoteric *logoi*.³

¹ For Epicrates fr. 11 Kock see vol. iv, 22 and vol. v, 464.

² Once only, at *Poet.* 1454b17 ἀρττοι διὰ περὶ αὐτῶν ἐν τοῖς ἐκδεδομένοις λόγοις. On the meaning of 'published' in 4th cent. a.c., cf. *AABT*, 441f.

³ Diels's translation of καὶ γὰρ as 'weil', on which he makes his argument depend (*Exot. Reden*, 10), is a mistake.

⁴ Modern authors too are fond of referring to themselves in the plural. All the passages in A. mentioning ἐξωτερικοὶ λόγοι will be found in Ross's *Metaph.* 11, 409. In modern times the first serious attempt to establish ἐξωτερικοὶ λόγοι as referring to works of A. himself was made by Bernays in 1863. On the whole it was not received with favour, and in England Grant offered a well-reasoned rejection of most of Bernays's claims in his *Ethics* 1, App. B, 398-409. Today the pendulum has swung again towards the belief that in some passages at least A. is referring to his own published works. Jaeger so regarded them all (*Aristotle*, 247-58), Ross some only (*Metaph.* 11, 409f.). Cf. also A. *De caelo* 279 a 30 τὰ ἐγκύκλια φιλοσοφήματα where the ref. is to the *De phil.* (See Simplic. *ad loc.*, 228, 30ff. Heib.)

Earlier in the *EE* (1217b22) he contrasts the 'exoteric' works with those that conform to the rules of philosophy,¹ saying that in both sorts he has refuted the idea that there is a Form of the Good. This supports a remark of Plutarch's that he combated the theory of Forms in his physical treatises and 'through the exoteric dialogues'.² If the phrase refers in these passages, as it must, to works of his own, so it will naturally in some other places where no verb in the first person occurs, e.g. *EN* 1101a26: 'Enough has been said about it in the exoteric *logoi* themselves, and we must make use of them' (*sc.* for the division of the soul into a rational and an irrational part, similarly *Pol.* 1323a21-24). In other places where the phrase occurs its reference is perhaps less certain,³ but for our purposes it is enough to know that Aristotle himself does distinguish in this way between his lectures or notebooks and other works of his own intended for a wider public but now lost. Cicero too speaks of Aristotle's use of *proemia* 'in those books which he calls "exoteric"' (he gives the word in its Greek form), and elsewhere observes, speaking of the works of Aristotle and Theophrastus, that on the subject of the highest good there are two kinds of book, 'one in a popular style, which they called "exoteric", and the other more technical, which they left in notebook form'.⁴

¹ κατὰ φιλοσοφίαν, i.e. conforming to scientific method. Cf. the descriptions of the 'exoteric' *logoi* ('works', or alternatively the arguments contained in them) by Philoponus and Simplicius: they were 'not demonstrative nor addressed to his genuine disciples but to the public, and resting on [merely] persuasive premises'; 'exoteric' means 'public, basing conclusions on generally accepted opinions, not demonstrative or suited to serious instruction (διδασκαλικά)'. Philop., in *Phys.* 705.22, Simpl. 695.34; texts in Ross, *Phys.*, 595.

² διὰ τῶν ἑξωτερικῶν διαλόγων, *adv. Col.* 1115c (*AABT*, 323). This weakens Ross's contention (*Metaph.* II, 409) that at *Phys.* 217b30 λόγοι means, 'as the preposition διὰ shows', not books but arguments. With such a versatile word as λόγος A. could have it both ways at once.

³ Some have thought that the word 'exoteric' does not always, or even ever, refer to A.'s own writings. An example would be *Phys.* 217b30, on which Diels's remarks on pp. 15ff. have some force. Bernays (1863), and Diels in his attempt to refute him (*Exot. Reden* 1883), show that controversy on this point was raging long before their time. In recent years, Düring (*Arist.*, 556) thinks it sometimes, but definitely not always, refers to writings of A. Dirlmeier in *Symp. Ar.* IV proposed that, meaning κατὰ τῆς φιλοσοφίας, it referred to logical handbooks of the type represented by the ps.-Platonic *Ἐποὶ* (a surprising place in which to find a refutation of the theory of Forms). Gaiser does not say on what grounds he thinks that the term is open to misunderstanding and should be avoided, nor why it 'probably does not mean his literary works' (*P.'s ungeschr. Lehre* 1968, 506 n.2; *Idee u. Zahl*, 36 n.15). Many years ago Thurot (d. 1882; see Diels, *Exot. Reden* 6) contended that the expression ἑξωτερικὸν λόγος signified any argument carried on διαλεκτικῶς or πρὸς ἑἶξιν (or, be added, λογικῶς, but that means something different; see p. 197 below). Ref. to other scholars are in Ross, *Metaph.* II, 408.

⁴ 'In commentariis', a word of wide application, used for notes, memoranda, commentaries or

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These published works are frequently mentioned, quoted or paraphrased by later Greek and Roman writers, so that besides knowing their titles we have a fair amount of information about their content and style.¹ This suggests that much of Aristotle's literary activity belonged to his earlier years, whereas the emphasis later was on esoteric teaching. Many were dialogues, and the impression given is that in them Aristotle was trying to carry on the work of Plato in his dialogues, as Plato had carried on the work of his own master Socrates. This comparison does not itself commit us to any opinion about the philosophical standpoint of his own dialogues. A vigorous and independent thinker like Aristotle may respect his master's achievements and make them the starting-point of his researches, without renouncing the belief that in his own hands philosophy is bound to progress. He may trust himself to see more clearly, after further work, the full implications of earlier arguments, to discard out-of-date methods and further develop what is of permanent validity. This is what Plato did for Socrates, and with such faith in its rightness that he did not hesitate to put his own more developed views into his teacher's mouth.

This device was open to Plato since the teaching of Socrates had been entirely oral. It was not available to Aristotle, when the mind of Plato lay open in the dialogues for anyone to inspect. But there were other ways of showing that he wished to be understood as revising and bringing up-to-date the work of his master on the same subjects. One was to choose the same titles for his dialogues: we have a record of a *Symposium*, *Politicus*, *Sophistes* and *Menexenus* by Aristotle. We need not suppose that they were mere colourless imitations, any more than Plato's were mere copies of the conversation of Socrates. They would rather be explanations or expansions of the Platonic works which aimed at bringing them into line with more recent thought. In a new generation the perennial problems are re-examined and the fundamentals

re-treated. The passages are *Ad Att.* 4.16.2, *Fin.* 5.5.12 (*AABT*, 426 and 427). The exoteric works are also mentioned by Cicero's younger contemporary Strabo (p. 60 below).

¹ Wilpert's paper 'The Fragments of A.'s Lost Writings', in *Symp. Ar.* 1, is of great importance for the history of editions of the fragments and in outlining the requirements for a new one. He gives full details of the editions of Rose, Walzer and Ross. The fate of A.'s writings has taken some curious turns. The survival of all the works we possess once hung on the slenderest of threads (see pp. 59-65 below), and the fragments of the lost works were sedulously collected by a scholar (V. Rose) who was firmly convinced that they were all apocryphal.

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of a philosophy like Plato's – the naturalness of law, say, or the immortality of the soul – need defence against new objections which their author never had to meet. In other ways too Aristotle shows that something like this was in his mind in writing the dialogues. In one the chief speaker was a Corinthian farmer who, on reading the *Gorgias*, was filled with such enthusiasm that he straightway left his field and vines and submitted his soul to Plato.¹ The *Eudemus* was written in memory of a pupil of the Academy killed in battle, and some of its arguments for the immortality of the soul follow the lines of the *Phaedo*.

In form, some at least of the dialogues did not resemble the Platonic, but followed a pattern introduced by Aristotle and known from the professed imitations of Cicero. In these each speaker made a long set speech, one against the other. The discussion resembled a formal debate, differing in this both from Plato's earlier, Socratic dialogues and the later, such as *Timaeus* and *Laws*, in which one speaker holds the floor entirely, merely prompted here and there by the others with a question or a word of assent. In some Aristotle spoke in his own person and indeed gave himself the chief part and he made use of *prooemia*, or introductory speeches – no doubt devoted to a preliminary setting out of the questions to be discussed.² Evidently they already betrayed their author's systematic cast of mind, and it does not sound as if they exercised the magic of a Socratic dialogue of Plato's. No doubt he was wise not to try to emulate those unrepeatable works of genius but instead to invent a form more suited to his own less imaginative temper.

Cicero's testimonies are:

Ad Att. 13.19.4: My recent writings are in the Aristotelian manner [*Ἀριστοτελείον morem habent*], in which the talk of the rest is so managed that he keeps the lead in his own hands.

Ad Att. 4.16.2: Since I employ introductions to each book, as Aristotle does in the works he calls 'exoteric'.

Ad fam. 1.9.13: So I wrote the three books of my discussion or dialogue *The Orator* in the Aristotelian manner [*Aristotelio more*], so far at least as I wished.

¹ Fr. 64 Rose; Ross, *Fragmenta*, 24. On the title (Nerinthos?) see Moraux, *Listes*, 32.

² According to his own maxim: 'For those who wish to solve problems it is helpful to state the problems well' (*Met.* B, 995 a 27).

The lost literary compositions

Ad Q. f. 3.5.1 (as an argument for speaking in his own person in a dialogue on politics): Lastly he [Sallustius] urged that Aristotle, when he writes of the state and of the outstanding man, speaks in his own person.¹

For the style of these literary works we have plenty of testimony. Cicero's praise of Aristotle's 'golden flow of speech' (*Ac. pr.* 38.119) is well known and by no means an isolated phrase. Some other examples from Cicero:

Top. 1.3. One should not be put off by obscurities in Aristotle. His writings commend themselves not only by their content but also 'by his incredibly abundant and attractive² style'.

De or. 1.2.49. Aristotle, Theophrastus and Carneades were 'eloquent and in style attractive and ornate'.

Fin. 5.4.11, of A. and Theophrastus: 'And on these matters [politics, ethics and the like] they write with splendour and distinction.'

Ad Att. 2.1: 'My own book [sc. an account of his consulship written in Greek] used up the whole scent-box of Isocrates and those of his pupils as well, and some of Aristotle's paint-box too.'

The juxtaposition of Isocrates and Aristotle is amusing in view of the rivalry between the two, which was well known to Cicero.

This side of Aristotle may seem surprising today, but as Jaeger wrote of the lecture-manuscripts, 'Everything is left to the oral delivery. It is not in the least to be feared that Aristotle in lecturing spoke the sort of Greek which many readers, who only know this side of him, worship with shudders of awe as true Aristotelian brevity.' In fact even in the lecture-manuscripts one comes across a passage every now and then in which the language has been much more fully and effectively elaborated on paper. Few experienced lecturers will be surprised at this. The need to prepare carefully beforehand not only one's thoughts but the

¹ It seems natural to suppose that the 'mos Aristotelius' refers to what Cicero mentions, i.e. the use of long speeches and (in some dialogues at least) the leading part taken by the author. See Hirzel, *Dialog* 1, 276. Yet to others the phrase has been matter for argument. Düring (*Arist.*, 555 n.11) says its meaning remains uncertain, and according to A. E. Douglas in his ed. of Cicero's *Brutus* (xvii n.1) 'its meaning has long been disputed'.

² Cicero's choice of epithets to commend style is naturally difficult to reproduce effectively in English. 'Suavitas' is a favourite. It recurs at *De or.* 1.2.49 and *De inv.* 2.2.6, and also in Quintilian (10.1.83), whom, however, Düring suspects of simply copying out Cicero (*AABT*, 364). Dion. Hal. (*De verb. comp.* 24, *AABT*, 361f.) singles out Democritus, Plato and A. as 'in my opinion' the best stylists among the philosophers. As for the obscurity also noted by Cicero, he comments elsewhere (in a fragment quoted in *AABT*, 363) that to explain A. calls for 'great mental exertion'.

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words in which to express them may arise either from the necessity to ensure clarity in a complex exposition or from a desire to produce an especially telling effect; for the lecturer who has none of the orator in his composition is in danger of losing his audience.¹

Cicero admired Aristotle as a philosopher no less than as a writer of fine prose, considering that Plato was his only rival for the title of 'princeps philosophorum'.² A passage already quoted in part has a special interest. It is *De finibus* 5.5.12 (*AABT*, 427). After drawing the distinction between the exoteric works of Aristotle and Theophrastus, written in a popular style, and the more technical or 'refined', he goes on to say that on the subject of the *summum bonum* these two 'do not always seem to say the same thing, yet in the main points ("in summa") there is no difference in those I have named, nor disagreement between the men themselves'.

Unfortunately Cicero's customary lucidity and elegance seem to have failed him in this sentence, so interesting for our purpose, and it is not immediately clear when he is distinguishing the two styles of writing and when the two men, Aristotle and Theophrastus. But so much, I should say, appears through its awkward construction, that it is the popular and specialist works ('duo genera librorum') that do not always say the same, and it is Aristotle and Theophrastus ('eos quos nominavi') who do not disagree on the subject of the *summum bonum* (whereas, he continues, they do disagree on the composition of the happy life).³ These remarks, then, show that Cicero was already aware, first, of the existence of the two classes of Aristotelian writings, and secondly that they did not always agree. In comparing the views of Aristotle and Theophrastus the existence of these two types of book was an added complication. In the past any theory of Aristotle's

¹ As places where we can find the style that Cicero admired, Düring (*AABT*, 363) lists *De caelo* 1.279 a 17-b3, *PA* 1.644 b 22-45 a 34, *Pol.* 7. 1333 b 26-34 a 10, *EN* 10.1177 b 26-78 a 8. To illustrate their contrary, the jottings to be filled out in the lecture-room, one might choose the rapid recapitulation of physical theory with which in *Met. A* chh. 1-5 A. leads up to the doctrine of the Unmoved Mover. The peroration of the *Sophistici Elenchi* (184b) provides an exceptionally clear example of a passage written out in full exactly as intended for oral delivery.

² *Fin.* 5.3-7, and cf. other passages on p. 361 of *AABT*.

³ Düring (*Arist.*, 556), to support his thesis that there was no distinction of doctrine between the exoteric and acroamatic works, relies on the words 'nec tamen in summa . . . dissensio', taken as if applying to the 'duo genera librorum', to counteract the effect of 'non semper idem dicere videntur', which he does not mention.

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development was hampered by the belief of some that if there were even a seeming discrepancy between the works we possess and others referred to as Aristotle's by ancient writers, this was simply evidence that the so-called lost works of Aristotle were spurious. This comment from an authority like Cicero (whose teacher in Greek philosophy was the Academician Antiochus of Ascalon), that discrepancies were noticed in his own time, should make one think twice before adopting such a view.

(3) Early fate of the school-writings¹

No account of Aristotle's writings would be complete without the astonishing story of the loss and subsequent recovery of the lecture-manuscripts and other notes of his own. 'It sounds like fiction and has often been dismissed as such', as Lesky truly said, yet it is far better attested than many stories of antiquity, by a contemporary and personal acquaintance of one, or two, of the principal actors. Here it is, as he tells it (Strabo 13.1.54, *AABT*, 382; Strabo's dates are approximately 63 B.C.—19 A.D.):

From Skepsis came the Socratics Erastus and Coriscus and Neleus son of Coriscus, who was taught by both Aristotle and Theophrastus and inherited the library of Theophrastus, which included Aristotle's. Aristotle left his to Theophrastus along with the school . . . and Theophrastus left it to Neleus,² who took it to Skepsis and left it to his descendants.³ These were no philosophers, and kept the books lying locked up and in disorder; but when they heard of the efforts of the Attalid kings, in whose dominions Skepsis lay, to find books to furnish the library at Pergamum, they concealed them in an underground cellar. There they suffered damage from damp and moth and

¹ To list all the extensive modern literature would be impracticable and unnecessary. The latest contribution is Moraux's in *Der Aristotelismus bei den Griechen* 1, cit. 1. Others are mentioned by Lynch, *A.'s School*, 147 n.20. Add Düring, *Arist.*, 34 and 43 and Brandis's article in *Rh. Mus.* 1827 ('careful examination . . . still worth reading', Düring). The judicious discussion by Zeller (2.2.138–54) has scarcely been improved upon, but for a radically sceptical view see Gottschalk, *Hermes* 1972, 335–42.

² The bequest is confirmed by Theophrastus's will, preserved in D.L. 5.52. Von Arnim was doubtless right in taking this as an indication that Theophrastus intended N. to succeed to the headship of the school after his own death. He can hardly have wished his library to go to Skepsis. In fact Serapio, a younger man, was appointed, and this would account for N.'s return to his home town, taking the rolls with him, perhaps 'in a huff', as von A. thought 'evident'. See von A. in *Hermes* 1928, 103–7.

³ Strabo uses the vague phrase τοῖς μετ' αὐτόν, 'those who came after him'. The context seems to exclude the possibility of successors in a school. Cf. οἱ ἀπὸ τοῦ γένους a few lines later.

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after a considerable time were sold by members of the family to Apellicon of Teos for a large sum. The sale comprised the books of both Aristotle and Theophrastus. Apellicon, a bibliophile rather than a philosopher, sought to restore the damaged parts and made new copies, but his restorations were faulty and he published the books full of errors. One may say then of the Peripatetic school that its earlier adherents, the immediate successors of Theophrastus, not possessing the books except for a few and those mostly the exoteric writings, had not the materials for serious philosophy but could only expatiate on generalities. Their successors, after these books had appeared, became better philosophers and Aristotelians, but owing to the numerous errors were for the most part compelled to be content with probabilities.

Rome herself played no small part in this, for Sulla, the conqueror of Athens, annexed Apellicon's library immediately after his death. It was brought to Rome, where Tyrannio the scholar, an admirer of Aristotle, won the confidence of the librarian and worked on the books, as did also certain booksellers who employed inferior copyists and made no comparison with the originals – an indignity suffered by most books offered for sale both here and in Alexandria.

Plutarch describes some of these events in connexion with Sulla's entry into Athens in 86 B.C. (*Sulla* 26; *AABT*, 383). Some of it seems to come straight from Strabo, but the part played by Andronicus is new.¹

Then putting to sea from Ephesus with his whole fleet, after two days he anchored in the Piraeus. And after receiving initiation,² he annexed for himself the library of Apellicon of Teos. This contained most of the books of Aristotle and Theophrastus, which were still not generally well known. We are told that the collection was brought to Rome, where Tyrannio the scholar put most of it in order, and that Andronicus the Rhodian was supplied by him with the copies and published them, and compiled the catalogues which are now current. The earlier Peripatetics were clearly clever and scholarly men in themselves, but had no extensive or accurate acquaintance with the writings of Aristotle and Theophrastus, for the reason that the property of Neleus, to whom Theophrastus left the books, descended to persons ignorant and lacking in proper ambition.

¹ Düring believes it was taken from another work of Strabo, *ιστορικὰ ὑπομνήματα*, now lost ('probably' from it in *AABT*, 394, but without qualification in *Arist.*, 40 n. 250). This was first suggested by Zeller (2.2.139 n. 2), and if true, brings us back to our contemporary source again.

² *ὑποτέλεις* is somewhat arbitrarily excised by Düring (*AABT*, 395). Politically it would be a good gesture.

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Strabo, the original reporter of these events, was not only contemporary with them, but as he tells us himself, was a student of Aristotle's philosophy who attended lectures on it with Boethus, a pupil of Andronicus (Philop. *Cat.* 5.19; see Zeller, 3.1.646 n.2), and also lectures by Tyrannio. He must certainly have known Andronicus as well, whom he calls 'the Peripatetic'.¹ His context makes plain that 'the books of Aristotle and Theophrastus' included their own writings as well as the library which they had collected. We must accept, then, that the original manuscripts of Aristotle's lectures and scientific notes lay unknown from the time of Neleus (in the generation after Aristotle) until about the time of Cicero, when they were the subject of an exciting literary discovery. They were brought to Rome, sorted by the librarian and scholar (γραμματικός) Tyrannio and finally edited and catalogued by the Peripatetic philosopher Andronicus of Rhodes, who also wrote an introduction to them in several books which is referred to by later Greek commentators.² One may well agree with Zeller (3.1.664) that Andronicus did 'an immortal service to Aristotelian studies' even without subscribing to the opinion that before his time the Peripatetic school was deprived completely of the main writings of Aristotle.

Tyrannio, that learned Greek from Pontus, whom Lucullus when he took Amisus wisely brought back with him to Rome, was well known to Cicero, who employed him to arrange his library and was so delighted with the result that he exclaimed to Atticus, 'My house seems to have been given a soul!'³ He must have known of the discovery,⁴ and we have seen that he occasionally shows himself aware of both kinds of Aristotle's writings; but for practical purposes he ignores the school-works entirely and continues to quote regularly

¹ See Strabo 16.2.24, 12.3.16, 14.2.13 (pp. 1056, 914, 770 Meineke).

² E.g. Simplicius *Phys.* 923 on the arrangement of the books of the *Physics* by Andronicus ἐν τῷ τρίτῳ τῶν Ἀριστοτέλους βιβλίων. On Andronicus and his work see Zeller 3.1.642-6, Düring, *AABT*, 420-5 and Lynch, *A's School*, 202f. Cf. also Düring's *Arist.*, 39: 'He it was who through his edition opened the gate to A. for posterity.'

³ 'Mens addita videtur meis aedibus!' (*Ad Att.* 4.8a.)

⁴ According to Düring he knew of Tyrannio's work on the newly-discovered corpus, but not of the edition of Andronicus. This fine distinction results from his dating the edition between 40 and 20 B.C. (*Transmission*, 69, *Arist.*, 40; Cicero was assassinated in 43). Moraux on the other hand, in *Der Aristotelismus* (1973), is satisfied that it appeared before 50. He assumes that it was based on other mss. besides those from Skepsis.

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from the dialogues. This need not surprise us, considering the nature of the writings and the probable effect of their discovery on a contemporary. Two arguments, both unsound, have been urged from time to time in favour of wholesale rejection of Strabo's story. First comes the improbability of so outstanding a piece of philosophical literature, as one critic called it, ever being lost; to which the brief answer is that far from being an outstanding piece of any sort of literature, what was recovered would to a large extent not have been regarded as literature at all. Secondly, philosophers of the intervening period – the later Peripatetics, Stoics and so on – do occasionally (not often) show acquaintance with the teaching of the lecture-manuscripts as well as the dialogues.¹ One may readily admit that Strabo was tempted to exaggerate the importance of the discovery, since it redounded to the credit of his own teacher (more probably teachers). This, unlike the improbable idea that he invented the story, goes far towards explaining the facts. To assume that the loss of Aristotle's manuscripts for over 200 years is incompatible with the fact that some philosophers in that period show an acquaintance with their contents involves supposing that the members of the Lyceum, free to discuss with Aristotle as well

¹ Zeller indeed claimed to find evidence that all A.'s works except *De partibus*, *De generatione* and *De motu animalium* and the 'minor anthropological treatises' were known in the interval between Theophrastus's death and Apellicon's purchase (2.2.152), and his arguments so impressed Grant that having accepted Strabo and Plut. in the first edition of his *Nic. Ethics* he retracted in later editions. (See also Grote, *Pl.* 1, 151f. n. m, on the work of Stahl.) To return to Z., three things, he says (*loc.* 141), are undeniable: (1) Theophrastus left his library to Neleus; (2) of this collection the writings of A. and Theophrastus themselves came into the hands of N.'s heirs, who hid them from the Attalids in a cellar where they were found in a parlous state by Apellicon; and (3) the edition of Andronicus was of epoch-making importance for the study and preservation of A.'s school-works. All that he denies is that the manuscripts discovered were the only copies.

Z.'s conclusions have been modified by the meticulous research of Moraux on the ancient lists of A.'s works. Relying on his attribution of D.L.'s list to Ariston of Ceos (3rd cent. B.C., successor of Lycon as head of the Peripatos), he shows that by no means all of those mentioned by Z. were known in the interval. The opinion of von Fritz in *Entretiens Hardt* IV, 86 is also valuable. In general the pendulum of scholarship has tended to swing the other way. Thus Düring (*Arist.*, 35–7) gives a few probable instances of knowledge of the treatises in Epicurus and the Stoics, but adds, 'Altogether there is astonishingly little evidence that the school-writings were known in Hellenistic times', and Moraux commits himself to the statement that 'for nearly 300 years the treatises of the Stagiris remained unknown to most philosophers'. Even Critolaus, 'the only Peripatetic of any importance in the period, plainly uses the dialogues of A. and not his esoteric works'. Epicurus too directed his attacks against the dialogues. (See Moraux, *Listes*, 2f. It should be noted that Moraux's attribution of D.L.'s catalogue to Ariston goes against the opinion of many who have thought it the work of Hermippus. See Berti, *Primo A.*, 160 n. 190. Lynch however, in *A.'s School*, 190, calls his case 'brilliant and plausible', as indeed it is.)

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as listen to his discourses, never took a note, let alone a copy, and forgot all he had taught. When Strabo describes the intervening generations of Peripatetics as being handicapped by the loss of his manuscripts, his fault lies not in telling us that they had to do without them, but in exaggerating the apparent¹ philosophical importance of their recovery. One can understand that Theophrastus, the philosopher's most intimate friend and colleague, and Neleus, who also knew him, would take pride in having his own manuscripts and regard their preservation as a pious duty. But with most of the school these personal considerations would have little weight. As already mentioned, there was evidently a body of writing kept in the school and regarded as common property. This, revised and added to by members, would seem the important thing. On this they would base their own writings. They would include their own notes of Aristotle's lectures and comments on them, and a world of discussion would grow up nominally, and to a large extent actually, based on genuine Aristotelian teaching.

Posidonius² described Apellicon as a dabbler, a man with a dilettante taste for a great variety of subjects. This fits well with Strabo's picture of him as a bibliophile rather than a philosopher, and illustrates the kind of interest which the news of his latest treasure would arouse. Cicero confessed that he had more respect for a philosophy if it were wedded to a decent prose style.³ He had no reason to be excited over the news that some moth-eaten lecture-notes had turned up by the man whose published dialogues he was already wont to read with pleasure: interesting, of course, to the curious explorer of the byways of literary history, but to the serious student of either literature or philosophy, scarcely a major event. Such would be his verdict,⁴ and that of many Roman intellectuals. The preservation, and subsequent careful

¹ Apparent, not real. One should not agree with Grant (*Ethics*, 9) when he opines that the rediscovery itself 'is of interest for bibliophiles rather than for philosophers'.

² Fr. 253 E. and K. *ap. Ath.* 5.214d, *AABT*, 382: ποικιλώτατον τινα καὶ ἀψικορον ζήσαντα βίον. (Andronicus in his π. παθῶν defines ἀψικορία as ἐπιθυμία ταχὺ ἐπιμιγλαμένη.)

³ *Tusc.* 1.4.7: 'Hanc enim perfectam philosophiam semper iudicavi, quae de maximis quaestionibus copiose posset ornateque dicere'; 2.3.7: 'Lectionem sine ulla delectatione neglego.'

⁴ This may do something to counteract Kerferd's remark in his review of Moraux (*CR* 1976, 213) that 'Cicero's silence must remain a considerable difficulty for those who argue for an early date' (*sc.* for the edition of Andronicus).

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redaction of the school-writings we owe, it would seem, to an unscientific literary curiosity allied to a personal interest in Aristotle, for Apellicon was a bibliophile and Tyrannio not simply a Peripatetic but an enthusiast for Aristotle, *philaristotelēs*. The school itself showed little interest. After Strato, who succeeded Theophrastus, it turned from philosophy and science to rhetoric and literature, so that 'even if the Peripatetics of this period possessed certain esoteric works of Aristotle... they scarcely studied them. It was above all the dialogues that interested them. They were easier to read, more attractive. They answered better to their taste for fine style and lack of philosophical depth.'¹

The admission that Strabo exaggerated the contemporary significance of the discovery does something to confirm the genuineness of the manuscripts recovered. If the literary works had previously represented all that was known of Aristotle's philosophy, it would have been easy to produce any early Peripatetic writings based on his teaching and claim that they were manuscripts of the master himself. They would at any rate have been regarded with some reason as a revelation of his real mind. In fact, however, much of his teaching had been discussed and criticized from his own day to Sulla's, and no one could expect to attract attention by making public some Peripatetic papers which gave their substance over again. But the discovery of his own manuscripts, including those written in preparation for lectures, was still a tale worth telling. In short, since so much of his teaching was already known, in the first place from notes and commentaries made by pupils, there was less risk of confusion between pupils' notes and those of Aristotle himself. This consideration may do something to support the justifiable faith, which Düring based on an unmistakable individuality of expression, that most of what we possess came ultimately from Aristotle's own pen, subject of course to corruptions and distortions from careless or ignorant restoration, about which our authorities have been perfectly frank. The form of the collection we owe to Andronicus, including its division into treatises according to what he judged relevant to particular subjects.² As time went on, the

¹ Moraux, *Listes*, 241. On the decline of the Peripatos see Wehrli, *Schule des A.* x, 95-128; Lynch, *A's School*, ch. v.

² Cf. Porphy., *V. Plot.* c. 24 (*AABT*, 214). It has long been held that the *Metaphysics* owes its present composition (and indeed its title) to Andronicus. The common belief (strongly

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superior philosophical value of these documents as Aristotle's own work came to be increasingly appreciated, with the result that the dialogues were studied less and less, and finally disappeared.

defended by Düring, *Arist.*, 391f.) is that under this heading (hardly a title, for it means no more than 'after the *physica*') Andronicus simply collected some miscellaneous papers which in his own edition he placed after the works on the world of nature. So also Ross, *Aristotle*, 13, and many others. But alas! Scholars can never agree, and J. Owens (*JPQ* 1969, 300) speaks of passing on 'Buhle's fantastic hypothesis that the *Metaphysics* owes its title to its position in Andronicus's edition. This should not be done without warning that this late eighteenth-century fabrication completely lacks historical support.' Cf. Moraux, *Listes*, 314: 'The name "metaphysics", the first mention of which was thought to be to found in Nicolas of Damascus, in fact long antedates Andronicus: Jaeger was quite right against Bonitz and Zeller.' For Jaeger see his *Aristotle*, 378f. A. H. Chroust in his article 'The Origin of Metaphysics' (*R. of Metaph.* 1960-1) pointed to a striking passage from Alex. (in *Met.* 171. 5-7 Hayd.), who says of σοφία or θεολογική, ἣν καὶ μὲν τὰ φυσικὰ ἐπιγράφει [sc. ὁ Ἀριστοτέλης] τῷ τῇ τάξει μετ'ἐκείνην εἶναι πρὸς ἡμᾶς. At *MA* 700b 9 A. himself refers to it as τὰ περὶ τῆς πρώτης φιλοσοφίας.

EUDEMUS, PROTREPTICUS AND DE PHILOSOPHIA

Some titles of Aristotle's lost works have been mentioned already (p. 55). Others include *On the Good*, *Gryllus*, *On Forms*, *Eudemus*, *Protrepticus*, *De philosophia*.¹ *On the Good* was mainly a report of Plato's lecture with the same title, and has found a place in the previous volume.² The *Gryllus*, or *On Rhetoric*, written and titled as a memorial to Xenophon's son Gryllus who was killed in battle in 362,³ was probably his earliest work, and probably, though not certainly, a dialogue. All that is known of its contents is Quintilian's statement (fr. 2, p. 8 Ross) that he not only admitted rhetoric to be an art, but allowed it a small share in the arts of politics and dialectic.⁴ If, as is likely, it was written with an eye on Plato's *Gorgias*, Pliny's paraphrase shows that even then he was prepared to go his own way and take Plato up on his denial that rhetoric was an art.⁵ *On Forms* will take its place when we come to Aristotle's criticisms of the Platonic doctrine. Here we may briefly consider the philosophical position of the other three, bound up

¹ For a full list see Ross's table 'Dialogi', *Fragmenta*, ix, but in fact not all these were dialogues. The *Protrepticus* was pretty certainly not (Düring, *Protr.*, 29-32), and on p. 1 Cicero's reference to the *συναγωγή τεχνῶν* should certainly not be included under 'Dialogi'.

² P. 425. See also Berti, *Primo A.*, 264-72, which is mainly a review of previous scholarship from Tennemann and Hegel to Wilpert and Krämer.

³ See Berti, *Primo A.*, whose case seems a good one. But scholars will never agree, and Chroust (*Arist.* 1, 359 n. 61) says dogmatically that this is 'apparently without foundation'. Cf. *Arist.* II, 30f. and n. 9. Nevertheless he believes that the *Against Aristotle* of Cephisodorus dealt with the *Gryllus* and was written 'about 360 B.C. or shortly thereafter' (*Arist.* II, 34). Chroust's essay on the *Gryllus* (*Arist.* II, ch. III) contains many stimulating but speculative suggestions as to its purpose.

⁴ For A.'s conception of dialectic, different from Plato's, see pp. 149-55 below. Neither it nor politics belongs to the exact sciences. For the *Gryllus* in general Berti, *Primo A.*, 160-6, should be read; but his ideas on its relation to the *Gorgias* are affected by his turning Pliny's 'non artem solum eam fatetur sed . . .' into a declaration on A.'s part that rhetoric is *not* an art.

⁵ I do not believe, as some do, that the rhetoric which he called an art was the 'true rhetoric' of *Phdr.*; that is, the Platonic philosophy (vol. IV, 412-17). For A. the practical knowledge needed for a *τεχνη* was at a lower level than pure, or theoretical, *ἐπιστήμη*, whose object is *what cannot be* otherwise. For the scale, or degrees, of cognition cf. *Met.* A ch. 1 and *EN* I 139 b 14ff.

Eudemus

as it is with the question of Aristotle's early adherence to Plato's belief in the transcendent existence of Forms.

(1) *Eudemus*¹

Of the *Eudemus* we have some expressly attested fragments and enough information to leave no doubt of its form (a dialogue) and its general philosophical position.² Eudemus of Cyprus,³ whom it commemorates, was a Platonist who died in the fighting around Syracuse in 354, the year that Dion was murdered and seven years before Plato's death.⁴ The dialogue told how, when desperately ill on a journey through Thessaly, Eudemus had a dream, in which a beautiful youth prophesied, among other things which duly came to pass, that after five years he would return home.⁵ Five years later, in Sicily, he remembered the dream and hoped for an opportunity to return to his native Cyprus. When he was killed, the moral was drawn that the soul returns to its true home⁶ when death releases it from the body. The dialogue continued in the same strain. The greatest boon is not to be born, and the next best thing to die as soon as possible. So far we have a mere echo of a poetic commonplace, a pessimism typically

¹ Of literature on the *Eud.* in general it will suffice to mention, besides Jaeger, Gigon, 'Proleg. to an Ed. of the *Eud.*' in *Symp. Ar.* 1; Düring, *Arist.*, 554-8; and De Vogel, *Philos.* 1, 307-17.

² I can do no more than repeat this sentence, written in my notes long ago, though in the meantime Düring has put forward his 'from the beginning' idea of A.'s abandonment of the Platonic Forms (see pp. 6-7 above), and I am sorry to subscribe to what he calls 'one of the crudest fables conceived'. Of the many contrary opinions I shall quote only two: those of A. Mansion (*A. in deu neu. Forsch.*, 10): 'There is agreement about the Platonic character of the *Eudemus* and its dependence on the *Phaedo*... Not even the theory of Ideas is missing'; and Wilpert (*Führerschriften*, 126): 'At any rate we find him six years before Plato's death [sc. in the *Eudemus*] still a convinced supporter of the theory of Forms.' But Nuyens also, in ch. II of his book on the development of A.'s psychology, fully endorses the same view.

³ Not to be confused with A.'s pupil Eudemus of Rhodes.

⁴ Plut., *Diou* 32.3 (*Eud.* fr. 1 Ross). On the date see further Spoerri in *Mus. Helv.* 1966, 44-6; Chernus, *Arist.* 11, 44f. 'Whom it commemorates', *ὃς ἐν τριήκοντι* Plut.; 'a Platonist': Plut. says he was *τῶν φιλοσόφων*, and one may assume that the philosophers in question, would-be avengers of Dion, were members of the Academy. In any case Cicero calls him a friend ('familiaris') of A.

⁵ In the prophetic dream A. is introducing a popular motif, and it is unnecessary to relate to his own philosophical theory of dreams as some have done. The *Eud.* evidently included many mythological elements. Nevertheless the passage of Sextus included by editors among the fragments of *De phil.* seems to show that in his younger days A. did believe in prophetic dreams, a belief abandoned when he came to write *Div. per somn.* (p. 87 below).

⁶ It is a return: 'domum revertisse'. The information comes from Cicero, *Div. ad Brut.* 1.25.53 (fr. 1 Ross).

Eudemus, Protrepticus, De philosophia

Greek;¹ but whereas the poets sought only oblivion as an end to the sufferings of human life, the philosopher does not stop there. The words are put into the mouth of a mythical person, Silenus, and the speaker himself adds the reason: 'In saying this he clearly meant to imply that there is a better way of life in death than in our living.'²

Next we have a passage from Proclus (*in Remp.* 2.349 Kroll, fr. 5 Ross), attributed to Aristotle by name, and scarcely assignable to any other work but the *Eudemus*.

The divine Aristotle too tells us the reason why the soul when it comes from there to here forgets the sights it has seen there, but when it goes from here it remembers there the experience it has had here. We must accept the argument; for he points out himself that some people when they pass from health into sickness forget the very letters they have learned, but this has never yet happened to anyone passing from sickness to health. Life without a body, he goes on, being natural to souls, resembles health, whereas life in bodies is unnatural and like disease. There they live their natural life, but here one contrary to their nature. It is natural therefore that souls coming from there forget the things there, but those passing thither from here remember the things here.

The language here is purely Platonic. Plato frequently uses the words 'here' and 'there', and the phrase 'from here to there', of this world and the next, and the soul's passage, through death, from the realm of change and decay to that of changeless reality, and speaks too of 'the sights it sees there'. These cannot well be anything but the Platonic Forms,³ and Plato's doctrine of learning as recollection is clearly stated. Aristotle may have modified it slightly, but it is not, as

¹ Cf. Theognis 425-28, Soph. O.C. 1224, Eur. fr. 449 and 285 vv. 1 and 2 Nauck.

² Fr. 6 Ross, from Plut. *Cons. ad Apoll.* 115b-e. διαγωγή has a rather more positive content than 'time spent', as Ross translates it.

³ Düring (*Eranos* 1956, 115) maintained that the words τὰ ἐκεῖ θεάματα were not A.'s but a Neoplatonic expression added by Proclus. Even if the actual words were his, one would still have to ask what he had found in A. to express in this way. But in fact the terminology is not Neoplatonic but Platonic. At *Phdr.* 250c to pass ἐνθάδε ἔκταρ is to come into the presence of the Form Beauty itself, and at *Tha.* 176a-b to flee ἐνθάδε βάτος is the only way to escape evil. As *Pho.* 111a the 'real surface of the earth', mythical representation of the transcendent world of changeless Forms, is described as a θέαμα εὐδαιμόνων θεσπῶν. More can be said for Owen's idea (*Proc. Brit. Ac.* 1965, 131) that τὰ ἐκεῖ θεάματα were 'probably not the desiderated Forms but merely Sisyx and Lethe and the conventional paraphernalia of the underworld'; for I have noticed that where the plural θεάματα occurs in Plato it is in underworld myths and refers not to the Forms but to the spectacle of wicked souls getting their deserts (*Gorg.* 525c, *Rep.* 615d). Nevertheless this kind of reference would be inappropriate in the present context of souls enjoying their natural existence in the next world and being freed from earthly life as from a

some have thought, a contradiction of it to say that souls returning to this life from the other forget what they have seen when out of the body. It is an integral part of the Platonic theory. In the myth of *Rep.* 10 all souls must before reincarnation cross the plain of Lethe and drink the water of oblivion, of which whoever drinks forgets everything. In the more philosophical version of the *Timaeus*, the initial foolishness (ἀνοία 44a8) of the newly incarnated soul is attributed to the distortion of the mind-circles consequent on their confinement within the body's ebb and flow.¹ Only after many years, and a life spent in arduous intellectual training and the philosophy that follows on it, can a few wise souls, not having drunk too much of the water, recover the vision of the things beyond. The *Phaedrus* teaches the same lesson. On the converse of this in Aristotle, that we remember in the beyond our experiences on earth, it is difficult to be sure what Plato thought. In the *Meno*, the *locus classicus* for the doctrine of recollection, he says that the immortal soul, having been born many times, has seen things both here and in the other world, so that 'there is nothing that it has not learned', and it can be reminded of what it formerly knew. His own interest was in the non-empirical knowledge of mathematics and the Forms, and perhaps we should not take too seriously the expectation of Socrates in the *Apology* that after his death he will enjoy comparing his experiences with those of other unjustly condemned; but it is there, and his Pythagorean mentors, whom Aristotle too may have followed, certainly thought of recollection in the discarnate state as including the experiences of this life.²

Evidently Aristotle, no less than Plato, could enrich his dialogues with vivid metaphor and simile. The idea of bodily life as a sickness for the soul he supplemented first by the Orphic belief (taken from the *Phaedo*) that it was a punishment for sin, and secondly by a comparison with a refined form of torture practised by certain Etruscan pirates, who bound their living victims face to face with corpses.³

disease. A. has in mind those of whom Socrates says in *Rep.* (619c) that having 'soundly philosophized' (ὀγιώσας, lit. 'healthily') 'they will make the journey εὐθείᾳ ὁδῶν and back not by the rough subterranean path but by the smooth and heavenly'.

¹ *Tim.* 43a-44d, described in vol. v, 310f.

² *Meno* 81c. Cf. vol. iv, 249f. and (for Pythagoras) vol. i, 164.

³ Printed as from the *Prætr.* by Ross (fr. 10(b)) and other edd., presumably because it comes

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The old argument attacked in the *Phaedo*, that the soul, or life, results simply from a *harmonia*, or right (concordant) relationship of the bodily elements, and therefore cannot outlast the body, is met in fr. 7 Ross with a new objection, in which the intellectual temperament and tastes of Aristotle are already becoming apparent. If we cannot be sure how he himself expressed it, in the sources it has the crisp syllogistic style associated with the Aristotle we know. Soul is declared to be a substance. Now no substance has a contrary; but harmony has a contrary, namely disharmony; therefore soul is not a harmony. The statement that substances have no contraries recurs in the Aristotelian *Categories*.¹ A second objection he thought worth repeating in the later *De anima* (408a1-3), namely that in the body disharmony is manifested by disease, weakness, ugliness, and harmony by health, strength, beauty; but the soul is none of these, for 'even Thersites had a soul'! Neither Plato nor Aristotle seems always conscious of the confusion between *psychē* as the sheer power of animation, and *psychē* as a moral agent.²

Simplicius says (fr. 8 Ross) that in the *Eudemus* Aristotle called the soul a form. If this is so, then, since he thought of it as a substance and as existing naturally in a disembodied state, it provides further evidence of his belief in separately existing Forms. He would also be going beyond Plato, for whom the soul was not a Form, though 'kindred' to Forms and belonging like them to the world of true Being (vol. iv, 361). However, let us see how Simplicius continues.

In the dialogue *Eudemus* which he wrote about the soul, he shows the soul to be a form, and here [i.e. in *De anima* on which Simplicius is commenting]³ he praises those who call the soul receptive of form – not all of it but the intellect as cognizant of forms true in the second sense; for the true forms correspond to the *Nous* which is greater than soul.

from the *Protr.* of Iamblichus (as well as from Cicero); but many scholars (enumerated by Chroust, *Arist.* II, 309f. n. 24) would assign it to *Eudemus*.

¹ 3b24. On date and authenticity of the *Catt.* see p. 138 n. 2 below.

² Plato however did represent health, resulting from the right relationship between bodily organs, as *analogous* to the right relationship between the three parts of the soul which produces justice. This analogy between morality and health goes back to Socrates and the Sophists. See vol. iv, 347f., 475, 164.

³ Ross and Chroust, I would dare to say, make nonsense of the passage by omitting in their translations the words *ἐν τοῖς*, thus giving the impression that what follows comes from *Eudemus* (Ross, *Ox. Tr.* XII, 22; Chroust, *Arist.* II, 62).

Eudemus

One has to realize that Simplicius is using the *Eudemus* to illustrate his present subject, the *De anima*, and that what he says after 'here' is a paraphrase of part of the notoriously difficult ch. 4 of *De anima* 3 (429a27-29). This runs in translation,

And it was well said that the soul is the place of forms,¹ except that it is not the whole soul but the intellect, and that it knows the forms not actually but potentially.

The last words explain the 'second sense' of Simplicius: 'secondarily' means 'potentially'.²

The significance of other points in Simplicius's report can only be appreciated after fuller understanding of Aristotle's psychology and doctrine of matter and form. In *De anima* too he called the soul a form. It was, he said (412a19-21), 'substance as the form of an organic body potentially possessing life; and substance is actuality', i.e. the highest realization of form. But in this later psychology, corresponding to his developed ontology, forms no longer exist apart from the concrete things of which they constitute the formal element, and the human soul taken as a whole must perish with the body. No memories can be carried over into another existence, for only an impassible, impersonal mind survives death: that part of the soul which can receive impressions perishes (*De an.* 430a22-25). There is also in Aristotle's mature thought the one perfect actuality, the separate self-thinking mind which is God. The relationship of the human mind to this supreme Being belongs to a later stage in our inquiries, but it is probably what Simplicius refers to as 'the mind which is superior to soul and ranks with the Forms'.

Not only was Aristotle's philosophy a unity for Simplicius, but as a Neoplatonist he was anxious to reconcile it with Plato's. The *Eudemus* created no difficulties, but to retain Platonic Forms alongside the Unmoved Mover and the psychology of *De an.* was quite a tour de

¹ τὸν τοῦ εἶδω, equivalent to εἶδω δευτέρως, the phrase quoted by Simpl., which has occurred in A. a little earlier (429a15). It will be seen that Simpl. sticks fairly closely to the text of *De an.* τὸν τοῦ εἶδω does not correspond exactly to anything in Plato, and it is uncertain whom A. had in mind.

² In one of his several *diaireses* of being, A. says it is twofold (διττον τὸ ὄν), potential and actual (*Met.* 1069b15). I have bowed to Ross's authority in taking ἀληθῶν δευτέρως together, but may not δευτέρως be intended to qualify γνωστικόν? The mind knows the forms potentially.

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force. Proclus and Elias (frs. 3 and 4 Ross) both distinguished Aristotle's treatment in the school-literature from that in the dialogues, but account for it by saying that the dialogue form demands a different approach from that of treatises or lectures. Thus Elias: 'In the acroamatic works he establishes the immortality of the soul by compelling arguments, but in the dialogues he uses persuasion, as is reasonable'; and Proclus: 'In his treatise *De anima* he examined [the soul] scientifically and said nothing of its descent or its fortunes, but in the dialogues he dealt with these subjects separately.' Of the popular or persuasive type Elias quotes the argument that we make offerings to the dead and swear by them, which we would not do if they did not exist.

I shall not linger over two arguments urged by a number of scholars against taking the *Eudemus* seriously. One emphasizes that in a dialogue the speakers do not all represent the same point of view. Thus Düring: 'It is clear that, in the *Eudemus*, Aristotle gave a survey of various opinions on the human soul. It seems impossible to claim with certainty that any of the fragments represents Aristotle's own opinion.' Seeing that none of those who quote them give any hint of this situation, and all represent them as the views of Aristotle, this is a rather desperate expedient: it is certainly impossible to claim that any do not. The second is that because this is an elegy for a dead friend (what later came to be called a 'consolatio mortis'), Aristotle said things he did not believe. Thus Moraux: 'The truth is that the *Eudemus* could do nothing other than reproduce the ideas of the *Phaedo*. This – if I may put it so – was the rule of the *genre*. For centuries the *consolatio* was to go on opposing the miserable life led by man on this earth to the happy existence enjoyed by the soul in the other world.'¹ The words 'was to go on' reveal the true position. In Hellenistic and Roman times *consolationes* developed into a conventional *genre*.² In Aristotle's time there existed neither *genre* nor rules.

More serious is the argument from chronology. Berti has perhaps expressed it best:

¹ Düring, *AGPh* 1966, 315; Moraux, *Symp. Ar.* 1, 120. I quote them not as the sole, but as the most authoritative representatives of these views.

² Said to date from Crantor's book *Περὶ νέκρωτος*, imitated by Cicero, Plutarch and Seneca. See von Christ, ed. Schmid, *Gr. Literaturgesch.* II, 1.54, referring to K. Buresch, *Consolationum a Graecis Romanisque scriptarum hist. crit.*

Protrepticus

If all this were true [sc. Jaeger's claim about the philosophy of the *Eudemos*], we should find ourselves faced with the curious phenomenon of an Aristotle still fanatically faithful to a position held by Plato at the time of the distant *Phaedo*, written 25 or 30 years before the *Eudemos*, without taking account of the efforts made by Plato himself to re-value the sensible world in the series of dialogues from the *Parmenides* to the *Philebus* and *Timaeus*.¹

Now first, without accusing Aristotle of preaching what he had ceased to believe, one must freely admit that a memorial piece was no place for argument of the type found in the *Parmenides* or *Sophist*. Next, I am fortified by my belief (justified, I hope, in the previous volume) that Plato, though he came to see and discuss frankly the difficulties involved in the theory of Forms as expounded in the *Phaedo*, never abandoned it. (Cf. *Parm.* 135b.) The date of the *Phaedo* is uncertain, but since the *Eudemos* was written in or after 354 it must be over twenty years later, and perhaps twelve to fifteen years after Plato's later, critical dialogues. Plato had about six years to live, and Aristotle was thirty. I conclude that he was at that time one of the most conservative of Plato's pupils, siding with Plato himself rather than with Speusippus, Eudoxus and others who were trying out alternatives to Plato's own theory. Tisian arguments from probability² cannot withstand the positive evidence in our possession of the actual content of the dialogue. Nor do the critics mention the countervailing fact that, though Aristotle wrote the *Eudemos* many years after the *Phaedo*, it preceded his own treatise *De anima* by about as many, leaving plenty of time for new developments in his philosophy.

(2) *Protrepticus*³

A protreptic discourse (*protreptikos logos*) is literally one designed to 'turn' the reader 'towards', or convert him to, the way of life which

¹ *Prima A.*, 416f. But his own solution is perhaps a little weak. The same point is made by Rees, *Symp. Ar.* 1, 191.

² Those who have forgotten Tisias may be referred to vol. III, 178f.

³ See above all Düring *A.'s Protr.: an attempt at reconstruction* (1961), which besides introductory matter and commentary, provides the fr. themselves in both Greek and English, arranged 'in a reasonable order', and a bibliography; also his *Arist.*, 406-33. Following the pattern set by Diels in the *Vorsokratiker*, Düring classifies passages as A (testimonia), B (fragments) and C (related texts). His collection will be used here, and referred to by letter and number. For a summary of recent scholarship to date see A. H. Chroust, *Reconstr. of A.'s P.*, in *CP* 1965.

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the writer thinks best. The genre was used by the Sophists (a protreptic of Antisthenes is recorded), and Socrates in Plato's *Euthydemus* demonstrates to two Sophists how he would achieve the same end in his own style of question and answer. It was also a speciality of Isocrates. The *Protrepticus* of Aristotle was an exhortation to the philosophic life addressed to one Themison, described as a king of the Cypriots but otherwise unknown.¹ Düring claims that it can be dated with certainty, and makes out a good case for placing it between 353 and 351, i.e. practically contemporary with the *Eudemus*.²

Among Plato's ideals, that of the philosopher-king, or the philosopher as adviser to a king, seems to have aroused especial enthusiasm among his followers, several of whom he sent abroad to realize it (vol. IV, 23f.). The *Republic* itself must have exercised a tremendous influence then as in later ages, when not only was it of recent date but Plato in Sicily had shown himself ready to make every effort to put his ideals into practice. It took a firm hold on Aristotle, and would be in his mind when he wrote his protreptic discourse to the Cypriot ruler as it was when he went to the court of Hermias, and still later undertook the education of the young prince Alexander. In one of the only two expressly attested fragments of the work he tells the king that not only does his position not unfit him for philosophy; it gives him the best opportunities to pursue it.

Zeno told how Crates once sat in a shoemaker's workshop reading the *Protrepticus* of Aristotle, which he wrote to Themison the king of the Cypriotes saying that no one had greater advantages for the study of

¹ Fr. I Ross, A1 Düring. Not necessarily king of Cyprus as such. In about 351, after the death of Evagoras II, nine cities in Cyprus had each its own 'king'. See Düring, *Protr.*, 173f.

² Moraux and de Vogel would separate them by a matter of months only (*Symp. Ar.* 1, 121 and 252). For Düring, see his *Arist.*, 406; *Protr.*, 173f. It is based on a combination of arguments from the situation in Cyprus and the relationship between the *Protr.* and Isocrates's *Antidosis*. The priority of one to the other may never be settled, but that one had the other in mind, and they were practically contemporary, does seem clear. In *Eranos* 1956, 116, Düring wrote: 'We can date it more accurately than any other of A.'s early works: it was written in 354, just before [sic] Isocrates' discourse on the *Antidosis*.' He added that ref. to Plato's *Tim.*, *Soph.* and *Pol.* gave it 'a sure terminus post quem' (a change of mind from *Eranos* 1954, 159, where he spoke of both *Tim.* and *Laws* as later than A.'s *Protr.*). In *Protr.* (1961) and *Arist.*, however, he bases his date on the assumption that *Protr.* was a reply to L.'s speech. (In 1936 Einarson had argued that *Protr.* was a polemic against *Antid.*, but in 1941 von der Mühl maintained that *Antid.* was written in reply to *Protr.* Stark in 1954 supported v. d. M., and Lesky (*HGL*, 554) said he had 'shown' that Isocrates 'probably' made allusions to the *Protr.* Then we have Düring 1954 against Düring 1961. I have no views.)

Protrepticus

philosophy than he. He had immense wealth to spend on such pursuits, and reputation too. As Crates read, the shoemaker listened while he stitched, and Crates said: 'Philiscus, I think I shall write a *protrepticus* to you; for I see that you have more advantages for the study of philosophy than the man for whom Aristotle wrote.'¹

While still following Platonic ideals, Aristotle is beginning to assert his individuality. Plato did indeed believe that if a rich and powerful ruler could be converted to his philosophy, the results would be wonderful. But this is not the same as saying 'Plato too holds that riches and power are indispensable instruments of the Idea' (Jaeger, *Aristotle*, 55). One thinks of the vivid passages in *Republic* 6 where external advantages such as wealth and nobility, as well as health and good looks, are spoken of as the greatest obstacles to a naturally good, wise and generous man in fulfilling his philosophical potential. His own high qualities, as well as exceptional opportunities and the pressure of relatives and friends who want to make use of him, will combine to turn him away from philosophy in the direction of pride and self-seeking (vol. IV, 500f.). Few indeed, says Plato, are those whose naturally philosophic dispositions survive these manifold distractions and temptations. In Aristotle it is only *worthless* men who are misled into valuing material above moral benefit (*Protr.* B3 Düring).

The second attested fragment contains the famous argument that to practise philosophy is in any case unavoidable. If we ought to philosophize we ought to philosophize; and if we ought not to philosophize we still ought to philosophize, because the decision whether or not to philosophize is itself a philosophic one.²

The philosophical position of the *Protrepticus* has to be reconstructed

¹ Fr. 1 Ross, A1 Düring. Quoted by Stobaeus (4.32.21, p. 785 Heinse) from an epitome of Teles the Cynic (mid-3rd cent.), as part of an argument that poverty rather than riches fits a man for philosophy. Zeno himself was teaching in Athens before the end of the 4th cent., and Crates, his master and a pupil of Diogenes, well within A.'s lifetime. 'Crates, born in 365, may have read the *Protreptics* "in a shoemaker's workshop" not many years after it was published' (Düring, *Eranos* 1954, 148).

² Ross ff. 2, A2-6 Düring. The argument is given as a syllogism by a scholast on *An. Pr.*, by Olympiodorus and two later writers, and only slightly less formally by Clem. Alex., the earliest source. Alex. Aporod. put it thus: 'Even to ask the questions whether one ought to philosophize or not ranks as philosophy, as he himself [sc. A.] says in the *Protrepticus*.' Commentators since Rabinowitz (most recently Allan in *Phron.* 1976, 227) have followed him in denying that A. could have expressed the inference in the form reported on the grounds that A. did not develop a logic of hypothetical syllogisms. I do not myself see that it was necessary to develop any

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from the fragments imbedded in the composition of the same name by the Neoplatonist Iamblichus, a word-for-word plagiarist as his borrowings from Plato prove. Probably, as Düring says, he had no hope or intention of deceiving. His work was intended as an elementary textbook, as he says himself, not following any single school of philosophy but beginning 'in a general and popular manner of protreptic' (p. 7 Pistelli). His aim is not originality but to acquaint his readers with the work of the great thinkers of the past, and he will proceed in several stages from the elementary to the more technical. All the Aristotelian passages are from the first half. They were first detected by Ingram Bywater in 1869, and much of his selection has stood the test of time.¹ They reveal the *Protrepticus* as an interesting bridge between Plato and Aristotle's maturity, showing how much Platonism he retained (Düring's commentary is full of parallels) while at the same time containing opinions and sayings which can be paralleled in the surviving treatises, e.g. *Physics*, *Metaphysics* and in particular book 10 of the *Nichomachean Ethics*.² There were of course differences too. In *De anima* and the biological treatises he would not have chosen sensation as the distinguishing mark of life (B74 and 80). There life is defined as 'the power of self-nourishment and growth', and includes (senseless) plants.³ On the question whether his Platonism still

logical system before formulating this simple and incisive argument, so characteristic of A. W. C. Kneale had no doubts (*JHS* 1957.1, 62ff.). In A., the standard 1st fig. syllogism is expressed hypothetically.

¹ See on this Düring, *Protr.*, 24-7 (*Iamblichus' methods*) and 27-9 (*The excerpts from A.*); also his *Arist.*, 401. His arguments against the scepticism of Rahinowitz (1957) are cogent, and his view is shared by scholars of the calibre of Moraux, de Strycker, Spoerri and S. Mansion. The passages which he includes will be assumed here to have survived the siftings of the critics, and accepted as genuine excerpts from A.'s *Protrepticus*.

² A few examples are: the teleology of nature (but Ross omits B23); art imitates nature (B13); nature, art and chance as causes (B11 and 12); potentiality and act (B79-81); we are our minds (B62; cf. *EN* 1178a25; D. in his comm. quotes other parallels in *EN*, but oddly enough not this one); all men pursue wisdom (B77; cf. first sentence of *Met. A*).

Such echoes (or anticipations) of other works not unnaturally aroused the suspicion that Iamblichus drew on them as well as on the *Protr.* This was part of Rahinowitz's case for believing that what he offered is just 'a complex array of doctrines derived from many sources'. Hirzel argued this a century ago (*Hermes* 1876), and in a critique of Düring's *Protr.* in *AGPh* 1965 Flashar also contends that we cannot reconstruct the *Protr.* from Iamblichus because he used other exoteric works of A. and also Porphyry. In my own opinion Düring has dealt adequately with objections of this type on pp. 28f. of his *Protr.*

³ It is indeed a curious temporary aberration, considering Plato's view in *Tim.* (77a-b). Yet the statements are purely general, and do not appear to refer to 'the life of men, in contrast to that of animals [*sic*] and plants' (Jaeger, *Aristotle*, 257). For another suggestion see p. 282 n. 2 below.

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included the theory of transcendent Forms, I will produce my Tisian argument first. I remain convinced that the *Eudemus* taught it, along with the closely related doctrines of immortality, reincarnation and recollection which explain how we have seen the Forms and through philosophy may recover our lost knowledge of them. Now all agree that *Eudemus* and *Protrepticus* were written at practically the same time, and it is therefore unlikely that they differed on these central dogmas.

As for internal evidence, Jaeger perhaps weakened his case by putting considerable weight on Aristotle's use of a single word, *phronêsis*. It is unlikely that he of all people would use such a wide-ranging and widely-used term consistently in a technical Platonic sense; nor does he. This gave objectors to Jaeger's thesis a handle which they were not slow to catch hold of. Jaeger did, however, also grasp the essential point, that 'The amalgamation of ethics and ontology . . . is explicable only on the supposition that the words "prior" and "good" refer to the Forms' (*Aristotle*, 94). He has been much criticized for this but was certainly right.¹ The case does not rest on any terminological question but on the close union of practical living – ethics and politics – with pure or disinterested philosophy, metaphysics or ontology. In persuading Themison to take up philosophy Aristotle made a double point: *whereas on the one hand* philosophy (or *theoria*) should be practised for no ulterior end, being the best and highest of all employments, containing its end in itself and to be pursued even if no ulterior benefit should follow;² *nevertheless on the other* it will prove the best of all guides in practical matters too (B42–51).³ The very fact that it aims at exact truth, the object of which is real and immutable, provides it with the necessary canons for right action. So long as the real and immutable

¹ For ref. to holders of the opposite view (Hitzel, Gadamer, Düring) see S. Mansion, *Symp. Ar.* 1, 74 n. 2, and add de Vogel, *Philos.* 1, 318–22. Nuyens (*Psychologie*, 92), Moraux (*Symp. Ar.* 1, 128) and others agree with Jaeger on the presence of the Forms, and before Jaeger Thomas Case had no doubts about it (*Mind* 1925, 82f.).

² A Platonic touch; cf. *Philos.* 58c.

³ Cf. S. Mansion, *Symp. Ar.* 1, 69: 'A. refuses to distinguish *phronêsis* from well-being and moral virtue, which implies that for him the philosophical life by itself achieves human perfection and ethical excellence, without pursuing them as special aims, distinct from itself.' I quote this to draw attention to her admirably judicious and restrained article. On the question of Forms she refuses to be dogmatic, but concludes that 'even if we grant' that he is no longer a firm partisan of the theory, 'it cannot be denied that the whole atmosphere which surrounds his work is Platonic'.

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object of knowledge was a Platonic Form, i.e. primarily that of a moral virtue like justice or courage, consistently right conduct must clearly depend on exact knowledge.

In the *Ethics*, where the Form of the Good is firmly though regretfully rejected (1.4, 1096a11ff.), this is emphatically and repeatedly denied. If we feel he was rather labouring the point, we must remember that he was not starting to build on bare ground: he had an older building to demolish first, erected not only by Plato but by his own earlier self. Take first his initial statement of policy in book 1 (1094b23):

It is the mark of an educated man to aim at accuracy in each class of things only so far as the nature of the subject allows; to seek logical demonstration from an orator is clearly as absurd as to allow a mathematician to use the arts of persuasion.

This principle he repeats several times during the course of the book.

(1094b12) Precision is not to be sought for to the same degree in all discussions.

(1098a26) We must remember what was said before, and not strive after exactness indiscriminately in all subjects, but having regard to the subject-matter of each and so far as is relevant to the inquiry. A builder and a geometrician do not look for a right angle in the same way. The one wants it only in so far as it is useful to his work, but the other inquires what it is and what attributes it has, for he is an observer of the truth.¹

1103b34 Let it be agreed in advance that the whole discussion of human action must proceed in general terms and not with precision. As we said at the beginning, accounts must conform to their subject-matter,² and there is no permanence about what is to be done, and what is profitable, any more than what is healthy. Such being the exposition in general, in particular cases it must be even less precise. These do not fall under any art or rule,³ but the agents themselves must consider what suits the present situation, as with medicine and seamanship.

In other places too we are more or less directly reminded of the principle, e.g. at 1102a23:

¹ Cf. Plato *Phil.* 56d-57a and 62a. Even in the independence of his maturity, A.'s head remains surprisingly full of Platonic notions.

² κατὰ τὴν ὁλὴν οἱ λόγοι ἀπαιτητοί, another principle taken from Plato, who in defending the mythical form of his cosmogony wrote (*Tim.* 29b): 'We must lay it down that accounts will be of the same order as what they describe.'

³ A. exaggerates to make his point. For more measured discussion see bk 10, 1180b7-23 or *Met.* 981a12-30.

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Even the politician must study psychology, but for the sake of his art and so far as suffices to attain his object. To go further in precision is perhaps more laborious than his purpose requires.

(This seems to be aimed at Plato, *Phdr.* 271a ff.)

Once the abandonment of Plato's eternal, independently existing norms had effected, as we see, a clear separation of the practical from the theoretical sciences, Aristotle had no doubt to which class ethical and political studies belong. His aim in the *EN* is not the advancement of knowledge but the inculcation of right living. From bk 1 to bk 10 it is the same.

1103b26. The present study is not theoretical like the others, for our aim is not to know what goodness is but to become good; otherwise it would have been no use.¹ (Cf. 1095a5-6.)

1179a35. Is it not as we say, that where there are things to be done the aim is not to observe and get to know them? but to do them? Nor is it enough to know virtue: we must try to possess and practise it.

As I said in a previous volume, such a divorce between knowledge and goodness must have made Socrates turn in his grave. In the last book, to avoid any misunderstanding, Aristotle repeats his conviction that a life devoted to the disinterested exercise of reason and observation (*philosophia* or *theoria*) is the best because reason is man's highest faculty, at once his true self and the divine element in him; but its very supremacy disqualifies it as a guide in practical matters, and such a guide is what Aristotle has undertaken to provide in the *Ethics*. So also *Met.* 993b30: 'The aim of theoretical science is knowledge, of practical the work to be done. One does not attain full, or scientific, knowledge of anything until one knows its cause (the why), whereas in ethical study it is sufficient to know the fact (the what), and if this is sufficiently clear there is no need of the cause in addition' (*EN* 1095a5 f.).

The *Protrepticus* presents a different picture. It should suffice to consider the much-discussed passage divided by Düring into B46-51.²

¹ I simply cannot understand how in the face of this Düring could write (*Arist.*, 454), 'In *EN* on the other hand [*sc.* as opposed to *EE*] everything is directed towards *θεωρία* as the final aim.' It is the highest aim in life, but not the aim of a manual of ethics, which is *ὁ θεωρητικὸς λόγος*.

² Iambli. *Protr.*, ch. 10 (pp. 54-6 Pistelli). Nuyens, for example (*Psychologie*, 92), takes the same view as Jaeger and myself.

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Here Aristotle uses his favourite analogy from the arts and crafts to argue that theoretical knowledge is of the greatest use in practical life as well. A man is a better physician for a general acquaintance with natural sciences¹ (in itself a theoretical study), and in the crafts the best tools, such as the carpenter's straight-edge and compasses, are derived, he says, from observation of nature.² These enable the craftsman to test straightness and smoothness 'sufficiently according to the senses'.³ The statesman too must have 'certain standards (ἄρτοι), taken from nature itself and the truth (ἀπὸ τῆς φύσεως αὐτῆς καὶ τῆς ἀληθείας), by which he will judge what is just, or good, or advantageous'. The difference is that

In other arts men take their tools and their most accurate calculations not from the primary realities themselves (οὐκ ἀπ' αὐτῶν τῶν πρώτων), so as to attain something like knowledge, but from copies at second, third or even further remove, and base their reasonings on experience. Only the philosopher copies directly from the exact realities (ἀπ' αὐτῶν τῶν ἀκριβῶν ἢ μίμησις ἐστὶ), for it is they themselves that he sees, not copies. So, just as a man is not a good builder if he does not use a plumb-line or other such instruments but compares his own buildings with others, so, I think, also if anyone lays down laws for cities or carries out any other actions with an eye on, and in imitation of, other actions or human constitutions – of Spartans or Cretans⁴ or any other such – he is not a good or serious legislator. An imitation of what is not good cannot be good, nor an imitation⁵ of what is not divine and stable in its nature (θείου καὶ βεβαίου τὴν φύσιν) be immortal and stable. Evidently the philosopher is the only craftsman whose laws are stable and his actions right and good, for he alone lives with his eye on nature and the divine (πρὸς τὴν φύσιν βλέπων ζῆ καὶ πρὸς τὸ θεῖον), and like a good sea-captain moors⁶ his life's principles to what is eternal and

¹ Cf. the quotation from *De sensu* on p. 20 n. 1.

² Water, light and the sun's rays are mentioned. It would have been interesting if A. (or Iamblichus, who may have cut something out) had stopped to explain what part these phenomena played in the instrument-maker's designs.

³ The contrast between judgement in the τέχναι, which is κατ' αἰσθησίν, and the knowledge of τὸ εἶν attained by dialectic, appears in the *Rep.* (511c), emphasizing the purely Platonic character of our present text.

⁴ A striking contrast in *EN* 1102a 10–11. 'As an example of this we have the lawmakers of the Cretans and Spartans.'

⁵ On the Platonic implications of the language of imitation (μιμήματα, μιμήσεις) see Jaeger, *Aristotle*, 91 with n. 2.

⁶ 'Directs his life in dependence on . . .' Ross, who reads ὁρμῇ (ὁρμαί Vitelli, Pistelli, Düring et al.). But what then becomes of ἀναψάμενος, which Ross does not translate? See on the question Düring, *Protr.*, 123.

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unchanging (ἐξ αἰδιῶν καὶ μούμου), anchors there and lives as his own master. This knowledge is indeed theoretical, but enables us to fashion everything in accordance with it. Just as sight makes and fashions nothing, its whole function being to distinguish and make clear what is visible, yet allows us to act by its means and affords the greatest assistance to our actions (for without it we should be practically reduced to immobility), so it is clear that although knowledge is theoretical, yet we do innumerable things in accordance with it, choose some actions and avoid others, and in general obtain all good things by its means.

Words may mean different things to different philosophers, but in this case the evidence of language is overwhelming that the contrast expressed is between the changeable, imperfect world of the senses and the unchanging, everlasting Forms.¹ The comparison between sight, the keenest of the senses, and theoretical knowledge is particularly instructive as suggesting how information itself can facilitate action. The handicrafts are introduced as an analogy: as they take for their standards what is good enough for the senses, so the philosophic statesman has his standards, which are nothing less than the divine, immutable, immortal. As Plato said in the *Republic*, 'What is contemplated by the dialectician's knowledge of intelligible reality is clearer than the subject-matter of what are called the arts.' It is no use a lawgiver copying the constitution of Sparta or any other human state, for none are good or lasting. He needs the best, the ideal, 'for his model is nature (*physis*) and the divine'. This is the 'divine model' of the lawgiver of the *Republic*, whose laws, as in the *Politicus*, are 'copies of the truth'.²

Much depends on the reference of *physis*. Düring takes it to apply to the sensible, physical world, so that what Aristotle is here advocating is the study of natural science, as in his mature philosophy when a teleologically oriented nature had replaced the Forms as the primary reality. Surely the whole context makes this impossible. For Aristotle

¹ So also Wilpert, *Frühschriften*, 65: 'Damit erweist sich φύσις als synonym für die Idee', etc. Von Fritz and Kapp (*Articles on A.* 2, 113) have drawn attention to the striking contrast between this passage and *EN* 1181 b 15-22. (But their conclusion is wrong, 114f.)

² *Rep.* 511c, 500e. Cf. *Pol.* 300c μιμήματα τῆς ἀληθείας, *Protr.* B48 ἀπ' αὐτῶν τῶν ἀκριβῶν ἡ νύμησις ἐστίν. (The nearest to this use of ἀκριβής in Plato is perhaps *Pol.* 284d τὴν περὶ αὐτὸ τάκριβος ἐπόδειξιν, but cf. the passage beginning *Phil.* 56c, esp. 57d about the ἀκρίβεια τῶν ὄντως φιλοσοφούντων.)

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the essence of *physis* in our sense of the word 'nature' lay in its connexion with the idea of motion and change, whether as its cause, its goal or the subject which undergoes it. 'All natural things have within them a principle of motion and rest', and they include animals, plants and the four simple bodies (*Phys.* 2 *init.*).¹ At the beginning of *De caelo* he describes the study of nature as being mainly concerned with 'bodies, magnitudes and their changing properties and motions, and also with the principles belonging to that class of things; for of things constituted by nature some are bodies and magnitudes, some possess body and magnitude, and some are the principles of those which possess them'. This is not the *physis* of the *Protrepticus*. Nevertheless, as we are claiming Aristotle's language to be Platonic, it may be reassuring to point out that Plato himself sometimes used *physis* with reference to the Forms and their world. Examples are 'the *physis* of Beauty' – where *physis* replaces *idea* or *eidos* – the Forms that exist 'in nature', and the phrase 'the *physis* of reality'.²

There is much more of interest in the remains of the *Protrepticus*, for which the reader may be referred to Düring's studies.

(3) *De philosophia*³

Any remarks about the date of the dialogue 'On Philosophy' must be conjectural, and reflect a particular view of its contents and purpose.

¹ This is a rough-and-ready description of what belongs to a later stage in the exposition, but I have not forgotten the eternity of the whole cosmos nor the fixity of species, which are not relevant to the present situation.

² *Phdr.* 248b ἡ τοῦ κάλλους φύσις, *Parm.* 132d τὰ μὲν εἶδη ταῦτα ὥσπερ παραδείγματα ἔσταναι ἐν τῇ φύσει, *Pho.* 103b αὐτὸ τὸ ἰσχυρίον . . . τὸ ἐν τῇ φύσει, *Rep.* 537c τῆς τοῦ οὐτος φύσεως. De Vogel, *Symp. Ar.* 1, 253 mentions *Parm.* 132d, but otherwise I do not think these passages have been quoted in this connexion. (The refl. in Wilpert, *Frühschriften* 65 n. 60, are less relevant.) To the same scheme of ideas belong *Rep.* 612a αὐτῆς (sc. τῆς ψυχῆς) τὴν ἀληθεῖ φύσιν (which appears when soul has been released from body; cf. 618d) and *Thz.* 173 e-74a about the mind soaring up on its own to investigate πᾶσαν πάντῃ φύσιν τῶν οὐρανῶν ἐκαστοῦ ὅλου. That this is not confined to geometry and astronomy is evident from 175 c ἐκύσθη ἄνω . . . εἰς σέβην αὐτῆς δικαιοσύνης καὶ ἀδικίας. McDowell in his commentary (p. 175) fights hard to exclude the Forms from the digression on the philosopher, but even he can say no more than that it is 'possible' to explain these passages without them. (The present description of the relation between *Protr.* and *EN* differs from that presented by Von Fritz and Kapp in *Articles on A.* 2, 113ff.)

³ Any review of previous scholarship down to 1965 has been rendered superfluous by Berti's full and critical account of it in ch. iv of his *Primo A.*, which runs to nearly 100 pages, and 'Studi recenti sul Π.φ.δ. di A.' in *Giorn. di Metaf.* 1965.

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Thus Jaeger thought it could not possibly have been written before Plato's death, whereas for Berti it was not only written in Plato's lifetime but had considerable influence on the theology of the *Laws*.¹ Both against and in favour of Jaeger's view he can quote several impressive names. Whatever its date, it was a landmark in Aristotle's philosophical career, an attempt at a comprehensive work on philosophy in the form of a dialogue in which Aristotle himself took part, systematically divided into three books, each with an introductory speech,² which suggests a certain separateness of subjects. Such a work, a kind of manifesto in which Aristotle brought his own metaphysical and cosmological theories into relation with the whole sweep of religious and philosophical thought culminating in Plato, was bound to occupy an outstanding position among his literary works. Even after the rediscovery of the school-writings it seems to have resisted longer than others the decline which followed their acceptance as the most genuine documents of his thought, and some scholars believe that portions of it are embodied in certain of the school-writings themselves, notably *EN* and *De caelo* (Gigon, *Symp. Ar.* 1, 28). The quotations and references ("fragments") which we have give the impression that the first book contained a history of philosophy and pre-philosophical speculation down to the time of Plato; the second contained a criticism of Plato;³ and in the third Aristotle was trying out a comprehensive new system, with emphasis on cosmology, theology and the nature of the soul, to replace that based on the now rejected doctrines of transcendent Platonic Forms and a planning Intelligence as ultimate causes.⁴

The first book illustrates a practice of Aristotle familiar from the first books of the *Metaphysics*, *De anima* and elsewhere, that of introducing his own study of a subject in the context of a historical review of

¹ Later appeared Chroust's 'The Probable Date of A.'s *On Philosophy*', *Arist.* II, 141-58 (originally 1966). For what it is worth, I am inclined to think that Pliny's 'sic et A.' in *De phil.* fr. 6 belongs to the dialogue and clearly implies that A. mentioned P.'s death. This of course, if true, would settle the question.

² This is based on the premise that the quotations from Cicero on pp. 56-7f. above refer to *De phil.*

³ So Jaeger, and no doubt rightly; but the neglect of *De ideis* in his book is curious.

⁴ Explicit references to separate books of *De phil.* occur in Ross's *Fragmenta*, 73 and frs. 6, 11 and 26.

previous opinions. This in turn resulted from the characteristically Aristotelian faith (which I personally find attractive) that in every sincerely held belief, however overlaid with error, patient sifting will reveal a grain of truth (pp. 91f. below). The book is a great loss, when one considers how troubled are the sources of our knowledge of early Greek religion. Aristotle's fourth-century date, acute critical mind, and undoubted interest in the subject would have lent a peculiar value to his treatment of it. Unlike *Metaphysics A*, the *De phil.* did not stop at the beginning of scientific Greek thought, dismissing the early *theologoi* with a passing inconclusive mention (983b27-984a2). Our few quotations show that it discussed in some detail the forerunners of philosophy, both Greek and Oriental. In fr. 6 (expressly attributed to *De phil.* 1 by Diog. L.) he treats of Persian religion, expressing an opinion on the relative dates of the Magi and the Egyptians,¹ and explaining the dualism of Zoroastrian belief. In fr. 7 he brings the eye of a critical historian to bear on the authenticity of the Orphic writings current in his time, and subscribes to the theory that they were composed in the sixth century by Onomacritus.²

The *De phil.* marks a further stage in Aristotle's progress from Plato, though retaining many Platonic features, as he did to the end. The transcendence of Forms is denied,³ and statements in Plutarch and Proclus suggest that, as a psychologist might expect, the reaction against this central tenet of the teacher 'whom base souls are not fit even to praise',⁴ as well as of his earlier self, was strong, even violent. He

¹ It seems he said the Magi were older than the Egyptians. This is odd, because at *Meteor.* 352b20 he declares the Egyptians to be the oldest of mankind.

² In *OGR*, 59f., I gave, as I still think, adequate reasons why Cicero's 'Orpheum poetam docet A. numquam fuisse' (fr. 7) must mean 'that the poet Orpheus never existed', though Berti (*Primo A.*, 331) still follows Jaeger (*Aristotle*, 131) in supposing it to mean only 'that O. never was a poet'.

³ The curious sentence of Syrianus in fr. 11 is puzzling at first, and passed over too lightly by most scholars except de Vogel (*Philos.* 1, 323f.). It says: 'What A. said in bk 2 of *De phil.* attests his admission that he has said nothing against the theories of the Platonists, and does not at all understand the eidetic numbers if they are different from the mathematical. It runs like this . . .' De Vogel's translation of *ἡσέ* as 'but' seems unnatural, and the precious word-for-word quotation which follows shows that A.'s pretence of not understanding eidetic numbers was ironical. Syrianus, a polemical defender of Plato, has not troubled to understand A., and his quotation does not support his claims. See also Berti, *Primo A.*, 334f.

⁴ The elegiac poem in praise of Plato from which this quotation comes might well have been mentioned earlier as testimony to the admiration, even veneration, which A. felt for him. The text is in *AABT*, 316 and Ross, *Fragmenta*, 146.

attacked the Forms 'not only in treatises but also 'crying out loud in his exoteric dialogues that he could not sympathize with this doctrine even if he were thought to oppose it from a spirit of contentiousness'. So Proclus. Plutarch's version is that 'by bringing up every sort of difficulty against the Forms, in his *Metaphysics*, his *Physics*, and through the exoteric dialogues, he seemed to some to be acting more contentiously than philosophically, as if his object were to belittle Plato's philosophy'.¹

One legacy from Plato which he retained throughout his life received full treatment in *De phil.*² This is the theory that the human race is periodically overwhelmed by catastrophes – plague, famine, earthquake, flood, intensive warfare and so on – which wipe out all civilization with its arts, science and philosophy, so that the few miserable survivors must begin again from the lowest level. Here he envisaged the recovery in five stages, each marked by a different application of the word *sophia*. First, being forced to concentrate on the bare necessities of life, they give the name to such simple accomplishments as sowing and grinding corn. Then the *sophos* becomes the practitioner of arts, such as woodwork and architecture, which combine utility with a measure of culture and beauty. Third comes the establishment of political and legal systems, fourth the study of the natural world, until finally men turn to speculation about things divine and changeless beyond the physical universe, knowledge of which

¹ For Proclus see fr. 10 Ross and for Plut. (*adv. Col.* 1115c) Ross, *Fragmenta*, 4. That 'in the exoteric dialogues' refers primarily, if not exclusively, to *De phil.* I believe with many others. A. himself (if we may take *EE* as his), dismissing the theory of Forms as 'an empty abstraction', adds that the question has been examined in many ways in both the exoteric and the strictly philosophical works (*EE* 1217 b20–23). Wilpert argues that *De phil.* was wholly Platonic, and has been answered by de Vogel (*Philos.* 1, 248–51) and Berti (*Primo A.*, 327–9). More recently T. M. Robinson has done the same (*U. of Toronto Q.* 1967–8).

² Fr. 8 Ross. The idea of recurrent natural disasters and the painful recovery of civilization occurs in Plato in *Laws* bk 3, at *Tim.* 22c–e and *Cratylus* 109d–e. The endless cycle of lost and recovered knowledge is referred to again by A. at *Met.* 1074 b10, *Meteor.* 339b8, *Cael.* 270b19, *Pol.* 1329b25. Nearest to this passage is one from the *Protr.* of Iamblichus printed by Ross as fr. 8 of A.'s *Protr.*, though some think *De phil.* the more likely source. See Berti, *Primo A.*, 327 n. 47.

R. Zöepffel in a short essay *Historia und Geschichte bei A.* (1975) argues that A. does not think the catastrophes universal nor believe in the theory of a Great Year and world-wide destruction. If men made the same discoveries over and over again, it was rather because societies develop and are lost again independently in different places. In general, see C. Natali, 'La teoria aristotelica delle catastrofi', *Rev. di filologia* 1977, 402–24.

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becomes *sophia* in its properest sense. In this connexion Aristotle is also reported to have described proverbs as 'relics of ancient philosophy which perished in the great destructions of mankind, saved by their brevity and wit' – a reminder that he compiled a book of proverbs, and that Cephisodorus the pupil of Isocrates, who wrote a work against Aristotle in four books (lost, and perhaps better so), chides him for wasting time on the unworthy task of collecting them. Once again, he refuses to dismiss popular wisdom as beneath the notice of a philosopher.¹

Among typically 'Aristotelian' features, recurring at different stages in the school-writings, we find the two senses of 'for the sake of', referring respectively to end-in-view and beneficiary. Here Aristotle is his own witness, stating in the *Physics* that this has been explained in *De phil.*² Either in this dialogue or in the *Protrepticus* he also introduced a favourite observation, closely linked with his generally teleological outlook, that in the process of generation the temporally later stages are ontologically prior, or more developed.³ In the *Met.* he instances semen and human being, child and adult. A central doctrine, that the universe is uncreated and eternal, which he defends in detail in *De caelo*, appears here with some sharp criticism of those who have thought otherwise for supposing that 'so great a visible god, containing sun and moon and the whole pantheon of planets and fixed stars, was no better than a work made with hands (*τῶν χειροκμήτων*, fr. 18)'. This and the terms 'demiurge' and 'craftsman' (*τεχνίτης*; both in fr. 19c) make it pretty obvious that Plato is one of those aimed at, especially in view of other indications that much of bk 3 was directed to establishing his position vis-à-vis the cosmology of the *Timaeus*, with which at

¹ *De phil.* fr. 8, D.L. 5.26, Cephisodorus *ap. Atl.* 60d-e (*AABT*, 380).

² *Phys.* 194 a35, a good example of A.'s lecture-note style. It could be translated: 'In one sense we are ourselves an end – two senses of "for the sake of" – see *De phil.*' Cf. the laconic *τὸ δ' οὐ βίαια διττόν, τὸ μὲν οὐ τὸ δεῖν* at *De an.* 415 b2–3, and *Met.* 1072 b 2–3. A. Graeser has an article in *Mus. Helv.* 1972, "Über die Phil." und die zweifache Bedeutung der "causa finalis". Under the same head in my text I should have liked to include the opposites form and privation which occur in fr. 6 Ross; but the mild objection of Berti (*Primo A.*, 331), that 'in reality the motives for attributing the passage of Plutarch to the *De phil.* do not appear very clear', seems to me an understatement.

³ *τὸ γὰρ τῇ γενέσει ὕστερον οὐσίᾳ καὶ τελειότητι προηγείται* appears in *Protr.* fr. 8 Ross (*ad fin.*), but I have already remarked that there are grounds for attributing it to *De phil.* Cf. *Met.* 1050a4–6 *τὰ τῇ γενέσει ὕστερα τῷ εἶδει καὶ τῇ οὐσίᾳ πρότερα* κτλ. and other passages in Bonitz, *Index*, 652a20–24.

many points he agreed.¹ Plato was not indeed one of those 'terrible atheists' (fr. 18) who would have the cosmos destroyed as well as created, but this only made him the more illogical, for in Aristotle's view nothing created can last for ever, as he argues in *Cael.* 1, ch. 10.²

Democritus had seen the origin of religious beliefs in the terrors aroused by alarming meteorological phenomena. Aristotle also saw it in the skies, but more Platonically (cf. *Laws* 966d-e), in the admiration and awe inspired by the regularity and order of the celestial motions. Belief in gods had in fact for him two causes, the other being, curiously enough, the occurrence of prophetic dreams. According to Sextus he, like Democritus, accepted this as a fact, but later, in *Div. per somn.*, he expresses scepticism and offers explanations which exclude divine agency.³ On theology and the nature of the soul he appears to have had more to say in this dialogue, some of which has been variously interpreted. The main problems are (i) the point at which he evolved, against Plato, the impossibility of self-motion with, in consequence, the concept of an unmoved mover, and (ii) the relation of soul to the fifth element *aither*. These will be considered in the context of his general theological and psychological teaching. An introduction to *De phil.* can have no better conclusion than the magnificent passage translated by Cicero in which Aristotle expatiates on the grandeur of the natural world as leading inevitably to the idea of divine creation. To put it in the same class as a product of the craftsman's workshop may indeed be a diminution of its glory, yet what more natural than that on seeing its goodness, majesty and beauty men should have thought of it as a device of divine deliberation and loving care?⁴ Gone at last is the 'place beyond the heavens' of the *Phaedrus*, gone the Platonic subordination of the physical cosmos to a higher, ideal realm of pure transcendent Forms. Aristotle's language recalls the images of Plato's

¹ In the *Laws* too (892 b) nature in the popular sense of the word is said by Plato to owe its origin to τέχνη, and at *Soph.* 265e he asserts τὰ μὲν φύσιν λεγόμενα ποιεῖσθαι τέχνη. A. of course believed (whether correctly or not) that the genesis of the cosmos in *Tim.* was meant literally.

² Where his comment is slightly unfair. Cf. *Tim.* 33a, 41a-b (vol. v, 279).

³ Democritus A 75 and fr. 166 DK (vol. 11, 478 and 482), Arist. *De phil.* fr. 12a (attributed by Sextus to A., but not expressly to *De phil.*).

⁴ The difference between this, the Platonic, conception of the Universe and A.'s has been well expressed by Moreau (*A. et son école*, 24): A. saw it no longer as an artefact but as an organism, kept in being by an interior dynamism (etc.).

Eudemus, Protrepticus, De philosophia

Cave and the pond of air in the *Phaedo*, but in his picture it is this world of ours which is the upper region of light and truth. There are none living in the position of Plato's prisoners, unless one can imagine a race of men who have in truth been born in the bowels of the earth and never seen the wonders of our world.

That is a magnificent idea of Aristotle's, when he asks us to imagine a race of men who had always lived beneath the earth, in fine and beautiful mansions adorned with statues and pictures and furnished with everything whose abundance is supposed to make for happiness; but they have never emerged on to the surface of the earth, only heard by rumour and report of the existence of the gods, their power and holiness. Suppose then at a certain season the jaws of the earth were opened and from their hidden abodes they broke forth into *these regions which we inhabit*, when their chance was given them to emerge. Now when of a sudden they beheld the earth, the sea and the sky, and perceived the greatness of the clouds and the might of the winds, and gazed upon the sun, realizing not only its greatness and beauty but also its power, as it created day by spreading its light throughout the heavens; when later night had cast its shadow on the earth, and they saw the whole sky picked out and made glorious with stars, saw the varying light of the moon as it waxed and waned, the risings and settings of all these luminaries and their rolling courses fixed by immutable law to all eternity; when they beheld all this, I say, they would straightway believe that there are gods and that these mighty works are theirs. *Those are the words of Aristotle.*¹

We are not living in a cave, but in the sunlight, and it is real sunlight. Truth is to be found in the world around us – not simply, as Plato would have it, because even an imitation can tell us something about the reality which it imitates. The reality is here, if only we know how to look for it. How Aristotle justified this conviction philosophically, in the face of Platonic idealism, will be a major topic of this book.

¹ Cic. *ND* 2.37.95–96, *De phil.* fr. 13 Ross. This surely was the inspiration of Berkeley in his Second Dialogue, pp. 210f. Jessop, 243 of Everyman ed.

THE MIND OF ARISTOTLE

Aristotle, the only great philosopher who philosophized
out of a passion for understanding living nature.

Marjorie Grene

In the introduction to his *Aristotle* Jaeger remarks that the position of a philosopher in the history of thought is a product of the state of philosophy in his time and the internal development of his own ideas. He takes philosophy as he finds it, and modifies it in certain ways. True, but to understand his particular contribution I believe one needs an even more fundamental hypothesis: the internal tendencies of a philosopher's own ideas are themselves a product of existing philosophy and the impact on it of his own personality and cast of mind. We need not go further and ask for the origin of these in heredity or environment, but it is a fact that whereas his ideas will change during his lifetime, his type of mind, after the plastic years of boyhood, is unlikely to undergo any fundamental alteration. This basic outlook, or psychological slant, will colour all his writings, and chiefly determines the directions in which he modifies the work of his predecessors. Empiricist and idealist may observe the same facts and read the same philosophers, but develop their thoughts in opposite directions. Observation and previous philosophy are, as Aristotle might have put it himself, the material of his thoughts, and his mental character provides the formal cause which is at the same time the motive or efficient. Reading his works on logic, physics, ontology, psychology, ethics and the rest one inevitably acquires a familiarity with these traits, and I believe it will be useful for those now approaching him to have some of them in mind from the beginning. If this seems like putting the cart before the horse, I can only plead that the intention is to get rid of certain preconceived notions about him based less on first-hand acquaintance than on others who took him over and forced him into a scholastic groove which did not fit him at all. Needless to say, what follows must

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only be accepted if it stands the test of confrontation with Aristotle himself. I have purposely emphasized those aspects of his mind which explain his departures from Plato rather than the many points at which he followed Plato's lead.

1. One of his most remarkable characteristics was a tentative and step-by-step approach to an enquiry and a readiness to proceed by a process of trial and error. To amplify this:

(a) Before trying to solve a problem he will take the utmost care to see that it is fully stated and its nature understood. His view on this appears clearly, e.g., at the beginning of *Met. B* (995a 24):

We must, with a view to the knowledge we are seeking, enquire first what are the first questions to be asked. This includes both the various thoughts of others about them and anything they have overlooked. To those who wish to answer questions it is helpful to put the questions well: for the answer which is to come is the resolving of former difficulties, and it is impossible to untie unless one understands the knot.

With that he proceeds to devote the whole book to the setting-out of some fourteen major problems, for instance:

Philosophy, we say, is knowledge of causes. Can it be proper to a single science to know the causes of everything?

Do *summa genera* or *infimae species* have the greater claim to be reckoned substances and principles?

Does anything exist apart from sensible objects?

If science can only deal with classes, how is knowledge of the individual possible?¹

(b) It is characteristic of the same mind to carry a line of thought as far as it will go, and if it leads nowhere, simply drop it and try another. These are not the tactics to produce in every case a nicely rounded conclusion, but leave plenty of room for ragged edges, which greatly bother some of his interpreters. But they were unavoidable if only because, as we now know, the conflict in his mind between the

¹ *GC I* illustrates the method at work in a particular scientific investigation. Cf. 321 b 10: 'Now that we have sufficiently set out the problems, we must try to find a solution of the difficulty.' Those interested in the character of *Met. B* may consult Owens, *Doctrine of Being*, 113-46, and the authorities there quoted.

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Platonist and the anti-Platonist was never quite resolved. I add support from the opinions of two modern scholars. First, on inconsistencies in Aristotle, Le Blond remarks (*Logique et méthode*, xxvii): 'La constatation de ces incohérences . . . ne diminue pas A., est il besoin de la dire? Elle manifeste, en tant qu'il reconnaît l'obscurité et s'y résigne, la probité du philosophe, qui préfère souvent l'aporie à la solution tranchante.' And on p. 47: 'A. n'est pas tout d'une pièce, il n'est pas ceci ou cela, mais il est ceci et cela.' Second, Ross on the *Metaphysics* (vol. I, lxxvii): 'The *Metaphysics* as a whole expresses not a dogmatic system but the adventures of a mind in its search for truth.'

(c) With this goes something that has already been mentioned, his constant anxiety to give due consideration to the opinions of others. 'Therefore we must pay attention to the undemonstrated saying and opinions of experienced and older men, or those of practical wisdom, no less than to demonstrations; for through the eye of experience they see correctly' (*EN* 1143b11-14).

His defiant (in view of people like Parmenides and Plato) championship of the *consensus omnium* is truly remarkable: 'We maintain that what everyone believes is true. Whoever destroys this faith will hardly find a more credible one.'¹ In the *Ethics* (1153b27) he quotes with approval the line of Hesiod (*Erga* 763): 'No word is ever wholly lost that many peoples speak.' At the least, lay or earlier philosophic opinions made an excellent starting-point for argument. Brought to bear on them, the mind trained in dialectic and analytics could purge the dross of unscientific thinking and extract the true metal that remains.² 'If on any question the beliefs still stand after the difficulties have been resolved, that in itself is sufficient proof' (1145b6). The proper order of procedure is illustrated also at *EN*

¹ *EN* 1172b36-73a2, on the question whether pleasure is the good. He is not always in such a challenging mood. It has to be remembered that *EN* does not claim to be a scientific treatise (pp. 79f. above). For a serious discussion of the difference between knowledge and opinion (δόξα; cf. δὲ πᾶσι δοκεῖ in the *EN* passage) see *An. Post.* ch. 33. R. Bolton in *PR* 1976, 252, points out that ἐνδοξα may be those of experts as well as laymen, and opines that Aristotle would give precedence to the former. He perhaps tilts the balance too much the other way, e.g. Parmenides is not a happy example for his case. Aristotle's own description of ἐνδοξα is τὰ δοκοῦντα πᾶσιν ἢ τοῖς πλείστοις ἢ τοῖς σοφοῖς (*Top.* 100b21).

² Aristotle as the philosopher of common sense, of what mankind intuitively accepts as obvious, is the leading theme of a recent book by H. B. Veatch, *A.: a Contemporary Appreciation* (1974).

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1145 b 2-7: first establish the facts as they are known,¹ next consider the problems they raise, and finally confirm, if possible, all, or at least the authoritative majority, of received ideas.

(d) This tentativeness, and initial regard for other opinion, found expression in the aporetic method. An *aporia* (lit. 'no-way' or *cul-de-sac*) results when, arguing from a received belief, we reach a conclusion which is contradicted either by experience or by another received belief. This indicates that there is no thoroughfare (*poros*) that way. Aristotle describes an *aporia* thus (*EN* 1146a 24): 'The mind is fettered; it has no wish to stay where it is, because the conclusion does not content it; yet it cannot proceed further, because it has no means of resolving the argument.' He is speaking of sophistic arguments, which did of course delight in *aporai*, such as those in Plato's *Euthydemus*.

Aristotle was perhaps the first European philosopher to see himself in his own historical setting. If he believed that it was reserved for him and his contemporaries to bring science and philosophy to their culmination, it was only with the aid of their predecessors' achievements. With him, one might say, philosophy took a long step on the road to full self-consciousness. Until the present century he had been commonly regarded as the most dogmatic of philosophers rather than as the man I have been describing. That was the legacy of his medieval interpreters. It is a false picture, and a much truer one was given by Sir Thomas Browne in the seventeenth century than by some later critics. In the *Pseudodoxia* (7.13) he speaks of Aristotle

who in matters of difficulty, and such as were not without abstrusities, conceived it sufficient to deliver conjecturalities... he that was so well acquainted with ἢ ὅτι, and πότερον *utrum*, and *an quia*, as we observe in the Queries of his Problems; with ἰσως and ἐπὶ τὸ πολὺ, *fortasse* and *plerumque*, as is observable through all his works.

2. In sharp contrast to Plato, Aristotle had a strongly empirical side to his nature. Inevitably in the then state of scientific enquiry and the absence of technological aids, not to mention the fact of his Academic upbringing, he sometimes seems to indulge in unsubstantiated

¹ 'Observed facts' Ross, but Owen and Ackrill see φαίνόμενα here as the equivalent of ἐνδοξα, what people believe. (Ackrill, *Ethics*, 15; Owen, *Articles on A. 1*, 114.) They are perhaps right, but φαίνεσθαι of course has two meanings, according as it is imagined as used with infinitive or participle.

generalities, and to go astray in matters of fact. In spite of Darwin's well-known eulogy ('Linnaeus and Cuvier have been my two gods, though in very different ways, but they were mere schoolboys to old Aristotle')¹ it is easy for a hostile critic to produce a handful of biological howlers that might seem to put him out of court as a serious researcher. Other observations amaze the expert by their accuracy. A balanced and detailed account, from the modern point of view, of his achievement in the fields of reproduction and embryology is that of Joseph Needham in his *History of Embryology* (pp. 37-60). Though he is by no means uncritical, his verdict is that 'The depth of Aristotle's insight into the generation of animals has not been surpassed by any subsequent embryologist, and, considering the width of his other interests, cannot have been equalled.' In many passages, 'detailed observation is joined with acute reasoning', and the modern biologist also speaks of his 'wonderful powers of observation' and 'well deserved fame as an embryologist'. Even his teleology, though regrettable, was not an unmitigated disaster, 'for teleology is, like other varieties of common sense, useful from time to time', cf. p. 197 n. 2 below; and Needham tells how Harvey confessed that he was led to discover the circulation of the blood by his conviction that 'so Provident a Cause as Nature' must have acted with Design.

The situation is such that a fair-minded and well-informed general commentator like Düring can hardly avoid giving (though wrongly) an impression of self-contradiction. He often accuses Aristotle of *a priori* speculation, e.g. 'Although he so strongly emphasizes the absence from his outlook of the purely speculative methods of Plato, in

¹ In a letter of 1882 to Wm. Ogle, the translator of A.'s *PA* (*Life and Letters*, ed. F. Darwin, vol. 3, 252); often quoted, e.g. by Ross, *Aristotle*, 112, Peck, *PA* (Loeb ed.) 51, Needham, *Hist. of Embryology*, 42 n. 1. Cuvier himself expressed tremendous admiration for A. in his *Hist. des Sciences Naturelles* (7, 132, quoted by Lewes, *Aristotle*, 174). Some well-known errors are listed by Bourgey, *Obs. et Exp.*, 84 and Düring, *Arist.*, 521; and some of his remarkable successes by Charles Singer, *Hist. of Sci. Ideas*, 49f.

A.'s severest critic in this respect was G. H. Lewes, whose detailed analysis of the biological works in his *Aristotle* (1854) was designed to show up his failings as a scientific observer. In his conclusion L. writes (p. 376) that A. 'is not entitled to any place, great or small, among men specially distinguished as *observers*, in the scientific sense of the term: since not only did he fail to enrich Science with the valuable and accurate details which serve as the solid supports of speculation, he failed also to appreciate the primary conditions of successful observation. He collected many facts, he never scrutinized them.' This verdict from an early 'Verificationist' is doubtless, as Grant considered it (*Ethics* 1, 277 n. 14), too harsh; but in its support L. collected a multitude of interesting biological examples.

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reality he relies on speculative generalizations to a much higher degree.' At the same time 'every speculative theory of Aristotle has its origin in a simple observation of nature.' 'Aristotle's merits as an observer of facts, especially in marine biology, are indisputable.' In sum, he concludes, those like Russell who have amused themselves by compiling lists of Aristotle's mistakes exaggerate their importance. 'Most of the observations recorded by him are correct, and some are brilliant. Those on the other hand who try to explain away all errors as textual corruptions commit the contrary fault. Let us be content to note that Aristotle sometimes let himself be led astray by his informants.'¹ It is true that Aristotle made use of reported as well as first-hand observations (p. 43 n. 1 above), but not uncritically. After quoting Ctesias on Indian fauna he adds: 'But he is not a trustworthy source' (HA 606a8; cf. 523a26). Unfortunately even scepticism and a determination not to be duped can lead to error, as when he dismissed as travellers' tales what he had heard about the Dead Sea (*Meteor.* 359a16).

Detailed discussion of Aristotle's standing as a biologist must be left to specialists.² The main point here is one of intention, and the mentality behind it.³ The Neoplatonist Proclus, in his commentary on the *Timaeus* (1.295.26 Diehl), complained that in contrast to Plato he 'neglected theological principles and spent too much time on physical matters'. Aristotle's counter-attack would have been sharp. Both the following passages are criticisms of the *Timaeus* with its generation of physical elements from geometrical figures:

GC 316a6. Those who have spent more time among physical phenomena are better able to posit the kind of principles which can hold together over a

¹ Düring, *Arist.*, 520, 387, 521, 522; but the section beginning on p. 514 should be read as a whole.

² But an excellent short account and appraisal, with examples, will be found in G. E. R. Lloyd, *Aristotle*, ch. 4. For some further reading see his p. 73 n. 1. For the specialist there is the 1314-page Italian translation of all the biological works by Lanza and Vegetti, with a general introduction, generous footnotes, short introductions to the several works and an extensive bibliography. Besides its other merits, it is the only illustrated edition known to me (Greek vase-paintings of animals and fish). W. Kullmann in his *Wissenschaft und Methode* (1974) brings out well the importance of A.'s biological studies for his philosophy as a whole.

³ And even Lewes (*Aristotle*, 18) noted 'the dominant inductive tendency which led him on all subjects to collect the facts before reasoning on them'. For examples of actual experiments on animals see *ib.*, 112f.

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wide area, whereas those who through much abstract discussion have lost sight of the facts are more likely to dogmatize on the basis of few observations. [*Cael.* 306a5; the plural was perhaps intended to soften the reference to Plato, but the subject is the doctrine of the *Tim.*] These philosophers in speaking of phenomena say what is inconsistent with the phenomena. The reason is that they have no sound grasp of the primary principles but want to bring everything into line with certain predetermined theories... They stand on the truth of their premises against all the facts, not realizing that some premises must be judged in the light of their consequences.

In other places he drives home the same lesson.

GA 760b28. This then seems to be the manner of reproduction among bees, judging by theory and by what appear to be the facts about them. The facts however have not been adequately ascertained. If they ever are, then one must trust the evidence of the senses rather than theory, and theories only if their conclusions agree with the phenomena. (Cf. also 741a34 and 762a33.) *MA* 698a11. But we must understand this [the need for an unmoved mover] not simply as a general theory but with respect to the individual sensible things, through¹ which we seek to form the general theories themselves, and with which we think they ought to harmonize.

This empirical outlook, or commonsense realism,² goes naturally with the traits already mentioned as another aspect of one and the same man's intellectual equipment. It is what most sharply divides him from Plato, and will appear most clearly when we come to consider his doctrines of matter and form and the ontological primacy of the individual, and the difficulties into which they led him.

3. Aristotle's mind was logical. I ask pardon for using such a vague word, which of course must be further clarified later on. Since I mention it now under general mental characteristics I am obviously not using it in any very precise or limited sense. Briefly, by logic in this connexion I mean conscious reflection on the processes of thought. I

¹ Or possibly 'for the sake of', 'on account of' ('with these in view', O. Tr.), a use of διὰ with acc. paralleled at *EN* 1172b20, δὲ μὴ δι' ἑαυτὸν μὴ δ' ἑαυτὸν χάριν αἰσθόμεθα. But to take the preposition in its commonest sense suits the context best.

² I use this phrase in no technical sense. A.'s position shares some features, but not all, with 'naïve realism' as described e.g. by Ayer in his *Central Questions*. (See its index.) A. did not believe that everything that exists must be actually perceptible by the senses. And he did hold (unlike a Berkeleyan idealist) that our sensations are activated by 'underlying objects' which cannot cease to exist when not perceived (*Met.* 1010b33; cf. 1047a4).

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have said that with Aristotle philosophy became self-conscious: for him logic was the mind's study of its own workings. In this subject he claimed complete originality:

'Our purpose was to discover some faculty of reasoning, on any proposed subject, from the most generally accepted premises.' In almost all other arts, he continues, one has the work of predecessors to build on, 'but in this one it was not a case of part done and part still to do: nothing existed at all . . . On the subject of reasoning there was nothing for us to say until we had spent much time in first-hand research.'¹

The claim is not unreasonable. Plato doubtless saw that something like a science of logic was necessary, that before enquiry into the nature of being there is critical work to be done in such matters as defining terms and distinguishing valid from invalid forms of argument; but in his dialogues he introduced this without system into discussions of a more speculative nature. In general, as Susan Stebbing wrote (*Mod. Introd. to Logic*, 478): 'Plato's metaphysic provided an example of reflective thinking capable of logical analysis: he did not himself reflect upon the logical structure of his thought.'²

As the avowed clarifier of what others had haltingly or confusedly set forth, it was especially incumbent on Aristotle to give proper attention to the subject which in his view was preliminary and ancillary to all scientific and philosophical research (pp. 135ff. below). We have noted his habit of making the opinions of others a starting-point. All, from convinced theists to misguided materialists, had something to contribute, once purged of their faults, whether of substance or expression. The task of detecting it he approached with confidence, knowing that he brought to it the elements of a scientific logic applicable to 'any proposed subject'. This should be remembered when we meet the obvious objection³ that although he assumes a mantle of impartiality and claims to be only introducing clarity and order into his predecessors' accounts and bringing out their real intentions, in fact he is distorting their views to force them into his own different

¹ From last chapter of *SE*. Translated are 183 a 37f., b 34-36, 184 b 1-3. At 184 b 2 the O.Tr. gives excellent sense but goes slightly astray from the Greek. η does not mean 'but', and $\pi\rho\acute{o}\tau\epsilon\rho\omicron\nu$. . . η must be taken together.

² Cf. also M. Kneale, *Development of Logic*, 11f., beginning 'Plato enunciates a number of logical principles incidentally'.

³ Often raised, especially by Cherniss. See my article in *JHS* 1957.

scheme. The question can only be settled in his own way, by an examination of the material, but it is not irrelevant that he worked out a logical system which served the world until the nineteenth century. In the eighteenth Kant could still write: 'It is remarkable that to the present day this logic has not been able to advance a single step, and is thus to all appearance a closed and completed body of doctrine.' So too in more recent times C. Lejewski in the *Encyclopaedia of Philosophy* IV, 517, in the course of a brief assessment of Aristotle's logical achievement: 'Until the emergence of symbolic logic (that is, for more than two thousand years) Aristotle's authority on matters of logic remained unchallenged, and his logic was regarded as a comprehensive system which admitted of no extension.'

On such a foundation was based his bold claim to express the meaning of his predecessors better than they had expressed it themselves. This claim too is not inherently unreasonable. In an enlightening paragraph on the interpretation of Plato (*Philosophy* 1976, 362), I. M. Crombie remarks on the kind of falsification 'which we incur if we do not make use of our more articulated philosophical terminology when we are trying to conjecture his meaning'.

4. Among Aristotle's mental furniture I myself¹ would include his teleological outlook on the world. A teleologist sees all nature as fulfilling a purpose or purposes, whether consciously or not. Our own actions are normally directed to a consciously envisaged end or aim, which determines and explains them. The sequence of actions involved in building a house is only explicable by the fact that men and women need shelter for themselves and their possessions; therefore this must be provided, by their own labour or that of others.² The same type of behaviour may be observed in the creatures we call non-rational: a

¹ The personal note is necessary, for a different view is possible and has recently been ably maintained by A. Gotthelf, who contends that 'A.'s teleology is fundamentally *empirical* in character, and not an *a priori* doctrine brought to his investigation of nature'. ('A.'s Conception of Final Causality' in *R. of Metaph.* 1976, 237. The italics are his.) It may be, however, that what I shall say here will go some way to reconciling our points of view. In any case G.'s carefully thought-out essay on the thesis that final causation in A. is not reducible to non-teleological elements (in the manner of modern 'biological reduction') is enlightening and convincing.

² Mrs Grene in her *Portrait of A.* (p. 217) mentions Thomas Dewey's idea that a man builds a house for the pleasure of the activity of building, not to live in it – for he might die before the roof is on. One can only agree with her comment that, both in Aristotelian terms and in fact, this is nonsense. (A. would not deny that, given the purpose, a man might get pleasure out of the activity κατά συμβεβηκός.)

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spider's spinning or a bird's crossing the garden with a twig in its mouth is only to be explained by the *purpose* of preparing web or nest. Even in plants nature seems to collaborate for fulfilment of a purpose. A seed might be said to aim at growing into a stalk of wheat, fruiting and leaving other seeds to perpetuate the species; and *in order* that this may happen, the soil contains certain ingredients and sun and rain perform regular actions to assist it.

Faced with these phenomena, teleologists accept the explanation in terms of purpose as correct and final. Commonly, but by no means invariably, they are theists for whom the course of nature has been consciously shaped from outside by a divine mind. Others dismiss all ideas of purpose as fallacious. The argument from evidences of design fails because it is possible for the interaction of blind, random forces to *simulate* the results of purpose. Darwinian theories of evolution, taken by themselves, have led many to that conclusion. Ideally, no doubt, the question would be settled by purely scientific considerations, as the *outcome* of the investigator's observation and inference rather than something in him which determined the direction of the observation and inference themselves. In that case it would be wrong to include the teleological outlook among the features of intellectual temperament here selected for preliminary mention. But it is not so. Aristotle saw the same world as Democritus. His initial sympathy with Plato depended on the fact that both men were by nature teleologists, and in spite of the many differences that arose between them, so much common ground remained. Rather than call his outlook fundamentally empirical (see p. 97 n. 1 above), I prefer to say that the empirical and teleological sides of his mind – both strong, and the latter reinforced by his association with Plato and the Academy – were not easily combined, and one of the aims of the present study will be a sympathetic appreciation of his efforts to provide a credible empirical and rational basis for his teleological convictions.¹ For consciously and deliberately, it is true, he was an empiricist. Indeed in our summary of mental traits, the one that stands out above all others is his heroic determination that, so long as he is philosophizing, nothing is relevant but the facts of

¹ I find myself in agreement here with the interesting paragraph of Moreau, *A. et son école*, 37f., on the conflict between the Platonist and the empiricist in A., which he sees as putting his epistemology at odds with his ontology.

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experience and the conclusions that may indubitably be drawn from them. A good statement of his method is in bk 1 of the great manual of zoology, the *Historia animalium*. After beginning with some samples of differences between the parts and habits of creatures of different genera and species, he continues (491a7):

I have spoken so far in a general way, as a foretaste of the subjects and scope of our study. Later we shall go into full detail in order to grasp the marks of differentiation and the properties common to all. After that we shall attempt to discover their causes. This is the proper way to proceed, first completing the research on each individual species, for these facts will reveal both the subjects and the premises of our demonstration.

ABSTRACTION AND THE REVELATION OF FORM

The most difficult problem in writing about Aristotle is to decide the order of exposition. His system is in essentials so closely knit that its parts seem mutually explanatory. To understand doctrine A it is necessary to know about B, but if for that reason B is treated first, one finds that it cannot be expounded without reference to A. In this reciprocal way are linked, for instance, his teaching about matter, form and the concrete object and about potentiality and actuality, his conception of substance, the categories of being, the status of the individual, the four types of causality and their interrelations. Since one must start somewhere, I have chosen the two pairs of concepts, matter and form (with the corresponding philosophical method of abstracting the form from the compound) and potency and act, as being especially pervasive and necessary for an understanding of his investigations of separate branches of knowledge, whether in physics, metaphysics, psychology, biological taxonomy, ethics or even logic; for logic itself, in Aristotle's eyes the instrument or preliminary requirement for all philosophy, is best seen as the art of extracting the form of arguments from their matter. But wherever we begin, some forward references, and even repetitions, are probably inevitable.

In approaching the subject of form in Aristotle one must emphasize once again the Platonic background to his thought. Concerning the *transcendence* of specific and generic forms, loyalty to truth had overruled that due to friendship, but he did retain from earlier days a conviction of their *existence*, and of the supreme importance of the formal element in nature, which led him into some serious difficulties. Plato's confident 'for we shall find one there' (*Phil.* 16d), i.e. find a form in everything, remained true for Aristotle.¹

¹ Popper writes (*LSD*, 66): 'It is widely believed that it is possible to rise by a process called "abstraction" from individual concepts to universal concepts. This view is a near relation of

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The philosopher's object is to explain reality.¹ Plato and Aristotle both set themselves this task, and both, one may suppose, started with the same idea of the reality to be explained, namely the reality that lies around us, the sensible world. But the search, conducted according to the dictates of their different philosophical temperaments, led them in the end to rather different conclusions about where, after all, reality truly lay. Plato reasoned that reality, if it is a possible object of knowledge and not simply of wavering opinions, must be something constant and unchanging. Now the world we live in is subject to continual change, as Heraclitus truly said. Therefore either reality is unknowable or it exists elsewhere than in this world. The philosopher's faith that it must be knowable thus led him to postulate a transcendent realm of eternal and changeless substances as the only reality and the object of true knowledge. If such a brief and unqualified statement of Plato's position can hardly be fair, it is at least a statement of Aristotle's view of it, of Platonism as it appeared to his differently constituted mind, and so (what is to our present purpose) of the object of his criticism and reaction. Heraclitean flux and the Socratic insistence on definitions combined, he said, to convince Plato 'that the object of Socrates's study was nothing that existed in the sensible world, but something different. For, he reasoned, it is impossible for the common

inductive logic, with its passage from singular statements to universal statements. Logically, these procedures are equally impracticable.' If one is to bring A.'s position into any relation with Popper's well-known denial of induction ('Induction . . . is a myth', *C. and R.*, 53), it is worth emphasizing the entirely different metaphysical basis of A.'s procedure. Form can be abstracted (or extracted, contemplated apart) from a set of particulars, but is not on that account what would be known today as 'a mere abstraction'. Incidentally, Popper uses the terms 'specific' and 'singular' as interchangeable. This is unusual. He calls 'the class of Viennese dogs' an 'individual concept'. (See *LSD*, 63 and 65.) Since in discussing Aristotle the distinction between individual and specific being is fundamental, it may well be to remove at once this possible cause of confusion, which may sometimes be fostered by A.'s own inconsistent terminology.

¹ See *Met. Z.*, 1028b3. One must except the linguistic analysts of the twentieth century. According to Braithwaite in 1933, the aim of philosophy is not to satisfy *either* the emotions or the intellect, but simply to settle questions of the form: 'What exactly is meant by such-and-such a sentence?' (*Camb. Univ. Studies*, ed. Wright, 31f.) Two notable opponents of this conception of the philosopher's task have been Russell and Popper. See, in their context, (1) Russell, *My Phil. Development*, 217 (and cf. 230): 'In common with all philosophers before W II [Wittgenstein's second period], my fundamental aim has been to understand the world as well as may be . . . But now we are told that it is not the world which we are to try to understand but only sentences, and it is assumed that all sentences can count as true except those uttered by philosophers.' (2) Popper, preface to *LSD*: 'I however believe that there is at least one philosophical problem in which all men are interested. It is . . . the problem of understanding the world - including ourselves, and our knowledge, as part of the world.' (The italics are Popper's.)

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definition to apply to any of the sensibles, since they are always changing. Thus different class of existents he called Forms, and said that the sensibles are apart from them and named after them.¹

We shall look later on at some of Aristotle's objections to the theory of Forms (pp. 243ff. below). Suffice it now that he was finally led to reject them, and so entered his career as an independent philosopher in the conviction that reality was to be found within the world of sensible experience. What has been said of Galileo is equally true of Aristotle: 'The subject-matter of knowledge is not an intelligible "ideal" world . . . it is the intelligible structure of the world of events.'² Since motion and change are the most characteristic marks of nature, it is precisely these that have to be understood and explained – not run away from. To assume another world of static perfection is mere 'empty talk and poetic metaphor' (*Met.* 991a20), nor, if such existed, could one establish any causal relationship between it and our own. Unless a philosopher can reach his causes by a rational study of the events of this world, assuming nothing but what may be legitimately concluded from observation of its internal structure and behaviour, he must be considered a failure. 'Every product of nature has within itself a principle of motion and rest.' That is the starting-point. He continues: 'To try to prove by argument that nature exists would be laughable, for it is obvious that there are many such things, and to prove the obvious through the obscure shows an inability to distinguish what is self-evident from what is not.' (*Phys.* 192b13, 193a3.)

Brave words; but Plato's difficulty remained. How to bring within the compass of scientific knowledge a world of unstable phenomena, always changing, coming into being and passing away, never the same for two instants together? Does not knowledge demand a permanent object? Aristotle's opinion is, briefly and generally, this. Granted that, at a first view, the world seems to be in constant movement and to offer no fixed truths such as alone can make a natural philosophy possible, yet the trained mind can, by a process of thought, analyse this continual flux and find underlying it certain basic principles (*archai*) which

¹ *Met.* A ch. 6, 987b5–9. Cf. vol. v, 426.

² Quoted by S. Drake, *JHI* 1977, 19, from Randall, *The Career of Philosophy*. Not that A. would have agreed with the next sentence quoted: 'The best human language is mathematics.'

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do not change. These are not a set of substances existing apart from the sensible world, but they are capable of being thought of separately (λόγῳ χωριστά). They are not changeable, and it is they that are the objects of exact philosophy. In asking what these principles are, one must remember that throughout the discussion it is the individual sensible object alone which has full and separate existence, and for whose sake the whole investigation is being carried out – this man, this horse. To understand it, we must grasp certain things about it, the class to which it belongs, the internal structure which logically it must be supposed to have. This involves talking about its logical components separately, which must not, however, mislead us into thinking of them as if they ever *existed* separately, for they never do. To resist this temptation can be difficult, for Aristotle's own language is sometimes imprecise or inconsistent enough to lead us into it.¹ Indeed the modes of existence of particulars and forms cannot be fully understood until we have taken more of Aristotle's philosophy into consideration, notably the doctrine of the categories of being and the ontology of *Metaphysics Z*;² but I make no apology for emphasizing at this early stage Aristotle's inviolable commonsense postulate, *the primacy of the particular*, which can sometimes provide the key to what would otherwise seem a difficulty or inconsistency in his thought. With it goes the picture of the philosopher examining the things around him in order to abstract, by means of a logical analysis, certain common features which exist – in the things but not otherwise – which can nevertheless be regarded in abstraction from them by the mind and will explain their nature. Their existence is dependent on that of the individuals, for 'musicianship cannot exist unless there are musicians' (*Met.* 1018 b 36).

Seen thus, each separately existing object in the sensible world is resolvable into a compound (Greek *synrheton*, 'composite' or 'concrete' object), consisting of a substratum (*hypokeimenon*, 'underlying'), also called its matter (*hylē*), informed by, or possessing, a certain form (*eidos*). Since sensible substance changes from one state to another (*Phys.* 205 a 6, 'everything changes from opposite to opposite'), the forms are seen as pairs of opposites, and often so called. We may have

¹ Cf. Owen, *Symp. Ar.* III, 124.

² Ch. XI, pp. 210–14.

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a name for both the members of a pair (hot and cold, black and white), or one of them may appear as a positive state or quality and the other simply as its negative (order, disorder, and so in Greek *taxis*, *ataxia*). This linguistic usage led Aristotle to speak in some cases not of two opposite forms, but of a form and its *sterēsis*, which literally means just the privation or absence of that form. Sometimes the word seems to be used in less obvious ways,¹ but to introduce it like this should make it easier to understand.

The need for this analysis is best illustrated from a familiar work of Plato, the *Phaedo* (103a-c). Asked to reconcile an earlier statement that opposites come from opposites with his present one that no opposite can change into its opposite, Socrates explains that formerly he was speaking of things characterized by the opposites, but now of the opposites themselves. Aristotle inherited the problem, but could not approve a solution involving transcendent as well as immanent forms. The problem of change, said both philosophers, is indeed insoluble if it involves supposing that heat itself can ever become cold. It is of the essence of heat to be hot, so that to be anything but hot would mean its annihilation. The opposites therefore cannot act on each other. 'The opposites themselves will never originate from each other', said Plato (*Pho.* 103b); and Aristotle: 'The opposites are unaffected by each other; the presence of a third factor gives us a reasonable solution to this difficulty' (*Met.* 1075a30; cf. *Phys.* 190b33-35). If then we observe something hot becoming cold, or black hair turning white, the correct description of its alteration is that the heat, or black colour, is being replaced in its matter by something else.² 'White does not come

¹ For instance *στέρησις* can be something *κακοποιόν* (*Phys.* 192a15), because the positive opposite is identified with the *οὐ ἕνεκα*. A. is the least abstract of thinkers. Cold is the *στέρησις* of heat, and it might be thought that one is no more good or bad than the other. But think of a cup of tea, or one's shaving water. Adam in a note on Plato, *Euthyphro* 7a remarks that Greek words formed with alpha privative tend to indicate the positive contrary of a quality rather than its mere absence, e.g. *ἀνοφελής* is 'hurtful' rather than merely 'useless'. Again, in spite of being *καθ' αὐτὸ μὴ ὂν* (*Phys.* 192a5), *στέρησις* can be described as *εἶδος πῶς* (*ib.* 193b19). See further pp. 121f. below.

² In its Platonic form this argument appealed strongly to the 19th-century philosopher Hermann Lotze, who has described it very clearly: 'Perception shows us the things of sense undergoing changes in their qualities. But while black becomes white and sweet sour, it is not blackness itself which passes into whiteness, nor does sweetness become sourness; what happens is that these several qualities, each remaining identical with itself, succeed each other in the thing, and the conceptions through which we think these things have themselves no part in the

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into being, but wood becomes white' (*Met.* 1044b23). The first half of *Met. A* leads up to the argument for an unmoved mover by a rapid survey, compressed into note form, of his physical theories, useful for mnemonic purposes. There we read (1069b3):

Sensible substance is susceptible to change. Now if the change is between opposites or intermediate states... there must be some underlying thing which changes to the opposite condition, seeing that it is not the opposites that change. This substratum persists, the opposite does not. There is then a third factor besides the opposites, namely the matter.

So much for a first glance at Aristotle's teaching on the abstraction of form. It is the process whereby the natural philosopher, having observed and reflected on a number of sensible objects, understands them by perceiving the *eidos*¹ inherent in them all, constant and unchangeable, though the objects may change according to its presence or otherwise. Success demands a number of skills. For instance, it is no use examining data and trying to draw conclusions from them unless one understands what forms of argument are legitimate and what are not. Hence the principles of induction had to be set out and formal logic practically created. When we come to these, they may appear more comprehensible and more interesting if we have an inkling of the bigger problems to which, for Aristotle, they were ancillary, and of which in some cases they provide particular examples.

mutability which we attribute on account of their changes to the things of which the qualities are the predicates... It is a very simple and unpretending, but yet a very important thought to which Plato here gives expression for the first time.' (Lotze, *Logic*, 11; quoted by Kapp, *Ausgewählte Schriften*, 68.)

¹ Some of the terms here introduced in their distinctively Aristotelian sense will be found used by A. in other senses as well. It was typical of him to retain the popular sense of a word even after laying himself under the necessity of adapting it to his own technical requirements. For instance, a common meaning of *eidos* was 'outward and visible appearance', and so he often uses it, though in his own system it could have a very different meaning, as when the soul of a living creature is said to be its *eidos*. He was impatient of fixed terminology. Cf. *Met.* 1033b5: 'the *eidos*, or whatever one ought to call the shape in a sensible thing.'

VII

TELEOLOGY AND ITS DEFENCE: THE CONCEPT OF POTENTIALITY

(1) *Teleology*¹

Si on récuse la finalité comme explication, elle subsiste comme fait à expliquer.

E. Gilson

The second principle which I singled out for early mention (p. 100) was the concept of potential being. Like the importance of form, this too was the outcome of a habit of mind fostered by early training, namely the teleological, about which more may be said here as an introduction to potentiality itself. We have seen *what* it is, and following his own precept must now ask him *why*; in other words look at the conscious and reasoned defence of it which he duly offers. Its opponents were represented by the early Ionian cosmogonists, culminating in Democritus, whom Aristotle criticizes expressly for ignoring the final cause in nature (*GA* 789b 2-5). Socrates had described his disillusionment with them in the *Phaedo*. Their fault was to confuse necessary conditions with true cause,² and the worst offender was Anaxagoras, who promised better things by declaring that the First Cause was Mind, yet in his explanations made no use at all of this premise. Aristotle repeated the same criticism.³

The statements that nature does (or makes) nothing haphazard or

¹ Helpful writings not mentioned in the notes to this section include Theiler, *Teleol. Naturbetrachtung* (2nd ed., 1965), Pt. III; Balme, *A.'s Use of the Teleological Explanation* (1965); J. Owens, 'Teleology of Nature in A.', *Monist* 1968; Wieland, 'The Problem of Teleology' (in *Articles on A.* 1, albeit a curious and sometimes confusing contribution); A. Gotthelf, 'A.'s Conception of Final Causality', *R. of Metaph.* 1976.

² The distinction has had to be made all over again in modern times as if Socrates had never lived. See the extracts from Bern and Peters, *Social Principles and the Democratic State*, in Edwards and Pap, *Mod. Introd.*, 95-7; also Broad, *Mind and its Place*, 108f.

³ *Met.* 984 b 15. See vol. II, 274f. At *PA* 687 a 7 A. strikingly reverses a dictum of Anaxagoras: 'Anaxagoras attributes man's superior intelligence to the fact that he has hands. It is more probable that he received hands because of his superior intelligence. Hands are tools, and nature like an intelligent man allots each instrument to the animal that can use it.' Examples of the ways

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without a purpose¹ and the converse, that all her processes aim at some end, are frequent in Aristotle's works.² In the *Ethics* (1099a21-22) he declares that the products of nature are constituted in the best possible way. Well might Sir Alexander Grant comment that 'Aristotle views the world with a kind of natural optimism'. At *PA* 639b19 he even says that purpose (literally 'what it is for the sake of') is more evident in the works of nature than in those of human art. Is the purpose conscious on nature's part? It is not easy to be certain, and the question is often answered according to the commentator's personal attitude. Aristotle was not a fool, therefore he could not have been guilty of such crude anthropomorphism, or alternatively could not have entertained such an illogical idea as that of unconscious purpose.³ However, it is worth looking at the evidence.

If Aristotle did not literally personify nature, his use of personal metaphors and similes is remarkably persistent. Nature 'exercises her craft *sensibly*'; she '*seeks* what is serviceable', '*reaches after* the best', '*wishes*' a certain result, '*does nothing purposeless or unreasonable*', 'acts always *with an eye on* the best'. 'Like a good housekeeper, nature does not usually throw anything away if something useful can be made out of it.'⁴ Her conjunction with God, in Aristotle's saying 'God and nature do nothing without a purpose', could just possibly indicate a distinction between the two.⁵ On the other hand natural causation appears to be divine. 'The gifts of nature are not ours to command, but the truly

in which Socrates saw nature as providentially designed are given by Xenophon *Mem.* 1.4.4ff., 4.3.3ff.

¹ *μὴτερον* meant either 'frustra' (failing in its purpose) or 'temere' (without purpose) (vol. II, 415 n.2). That the first is intended here appears from the fact that nature does sometimes fail of her purpose (p. 113 below).

² A few instances are *PA* 641b12, 658a8, 661b23, *Cael.* 290a31, 291b13, *Pol.* 1253a9, *De an.* 415b16, 432b21, *GA* 741b4, 744a36. For more, see Bonito, *Index*, 837b.

³ Lesky (*HGL*, 559) retains it even while translating *μὴτερον* 'without intention'. He says: 'For him nature is an impersonal but at the same time wholly purposeful force which, as we can observe, does nothing without intention (*μὴτερον*).' But can an impersonal force act with intention ('Absicht' in the German original)? For Popper (whose native language is of course German), 'Absicht' means 'mind with an intention, a purpose' (*Self and Brain*, 155). So also Ewing, *Fundamental Questions*, 229f., e.g. 'it is extraordinarily difficult to see what such a thing as unconscious purpose could be'.

⁴ *GA* 731a24, *HA* 613a25, *GC* 336b27, *GA* 778a5, *Cael.* 291b13, *IA* 708a9, *GA* 774b16. At *Phys.* 199a20 the end-directed activities of the lower animals, and a *fortiori* of plants, are not the result of seeking or taking thought, but this could be because nature plans on their behalf.

⁵ E.g. at *Cael.* 271a33. Alternatively, *καὶ* can be approximately equivalent to our 'i.e.'.

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fortunate possess them as a result of certain divine causes.' 'All things have by nature something divine in them.' (*EN* 1179b22-23, 1153b32.)¹ Occasionally Aristotle uses a word (*ὥσπερ*) which could suggest, though it does not necessitate, analogy rather than identity; 'Nature makes nothing in a haphazard way, and it looks as if she acted of set purpose' in depriving the stars of the power of rectilinear motion; 'it is as if nature foresaw what would happen' (*Cael.* 290a31, 291a24). Others could point to phrases suggesting that nature and mind or thought (*νοῦς*, *διάνοια*) are alternatives,² but their context shows that this is his way of distinguishing between nature and human artifice. The thought opposed to nature in each case is man's. And the only difference that he sees between them is that in nature the cause of an event or a product is internal, in human art external to the effect.³ Both are equally 'for a purpose'. All things considered, we must at least say that if nature for Aristotle was end-directed, that was because it was divinely ordered. How far that involves personification cannot well be decided without taking into consideration other fundamental matters, such as the nature of the world's response to the supreme god (the Unmoved Mover) and the statement that the whole universe is alive, immortal and divine.⁴

Some of course find no difficulty in dissociating Aristotle's conception of natural processes as end-directed from any idea of deliberate purpose. Thus Allan (*Phil. of A.*, 33): 'The fact is that he holds that a process may be purposive, and yet not be the outcome of conscious choice'; Veatch (*Arist.*, 48): '... not, of course, in the sense of any deliberate or conscious purpose. Aristotelian final causes are no more than this: the regular and characteristic consequences or results that are

¹ But the diversity of A.'s language in different places makes his thought an elusive prey. At *PA* 656a7 he surmises that man may be the only animal to share in divinity.

² *Met.* 1065a27, *De an.* 415b16, *Phys.* 198a3 (though line 12 suggests that they are identical), and cf. 196b22.

³ *Met.* 1070a7. Exactly the same criterion, whether the forces applied to the material are internal or external, is used by Jacques Monod to distinguish living beings from artefacts (*Monod, Chance and Necessity*, 21). Aristotle too, when speaking of the products of nature, has primarily animals and plants in mind. In a way, an external cause is necessary in natural production too. Cf. *GA* 735a5-5: 'Art is the origin (*archē*) and form of the product but in another individual, whereas in nature the stimulus is internal to the product itself, though coming from another organism which possesses the form in actuality.'

⁴ *ὁ ὅλος κόσμος ἐκφυμένος*, *Cael.* 285a29; cf. 279a28-30. On these questions see pp. 252ff.

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correlated with the characteristic actions of the various agents and efficient causes that operate in the physical world.' But how correlated, one may ask? Aristotle's answer is that final causation is pre-eminent and logically prior; the efficient and formal aspects, so far as differentiated from the final, are secondary and subordinate. Grene writes (*Portrait of A.*, 133f.): 'Aristotelian "that for the sake of which" is not, in itself, a concept of purpose... Purposive action... is action involving deliberate choice. Nature, on the other hand, does not deliberate.' But Aristotle himself said, comparing the two, 'Art does not deliberate either' (*Phys.* 199b 26; see p. 114 below), and whatever he meant, an explanation is surely due from one who words her case like this.¹

The dilemma of the modern scientist faced with the appearance of teleology (or as he may call it, perhaps more accurately, teleonomy) in nature is brought out by the late Jacques Monod in his book *Chance and Necessity*. He defines it much as Aristotle did: 'The concept of teleonomy implies the idea of an *oriented, coherent and constructive activity*' (p. 51, his italics). He has no use for purpose as a primary cause in nature, which he calls 'the anthropocentric illusion'. 'All religions, nearly all philosophies, and even a part of science testify to the unwearying, heroic effort of mankind desperately denying its own contingency' (p. 50). But the dilemma remains. The teleonomic apparatus 'is entirely logical, wonderfully rational, and perfectly adapted to its purpose: to preserve and reproduce the structural norm.' Now 'the cornerstone of the scientific method is to postulate that nature is objective. In other words, the *systematic* denial that "true" knowledge can be reached by interpreting phenomena in terms of final causes - that is to say, of "purpose".' (This he dates from the formulation by Galileo and Descartes of the principle of inertia, which abolished Aristotelian physics and cosmology.) But the postulate of 'objectivity' itself, on which all scientific advance has to the last three centuries depended, 'nevertheless obliges us to recognize the teleonomic character of living organisms, to admit that in their structure and

¹ Rist's article 'Some Aspects of Aristotelian Teleology' in *TAPA* 1965 is a valuable contribution to this discussion. His own conclusion is (p. 349): 'That "unconscious purpose of nature" of which Ross spoke was no difficulty for Aristotle. We can see now that he was in the normal tradition of much of earlier Greek thought in not seeing it was a difficulty.'

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performance they decide on and pursue a purpose.' This Monod honestly calls 'a profound epistemological contradiction' which constitutes the central problem of biology (pp. 31f.). To speak of his own solution, of the precedence of invariance over teleonomy, would take us too far from our present subject, but the conclusion is that 'Pure chance, absolutely free but blind, is at the very root of the stupendous edifice of evolution' (p. 110). The paradox may be resolved, but it took the resources of twentieth-century microbiology to resolve it.

That nature was purposive and constructive was Aristotle's hypothesis,¹ and with his inclinations and background it is scarcely conceivable that he would have allowed his observations to persuade him to the contrary. Yet he did appeal to facts in its defence, and to start from a hypothesis has been a demand of scientists in most centuries. The following remarks are taken from some rather random reading. Popper's contention, that to observe first and form a hypothesis afterwards is not so much inadvisable as impossible, is well known. Cf. Claude Bernard: 'Of necessity we experiment with a preconceived idea', and Stebbing: 'The great discoverers are those who have viewed the facts in the light of a guiding hypothesis. No doubt a preconceived idea as to what the facts *must* be may hinder the investigator in ascertaining what the facts *are*. But to come to the facts with no preconceived idea is to prosecute a directionless inquiry.' From the scientist's side there is Max Planck: 'A historian looking for documents in the archives, and studying what he discovers, or an experimenter who pursues his work in the laboratory and scrutinizes his results, frequently finds the progress of his work facilitated . . . if he possesses a more or less deliberate intellectual attitude which guides his investigations and serves to interpret the results.' He then points out the dangers which this involves. Perhaps Darwin is also relevant: 'How odd it is that anyone should not see that all observation must be for or against some view if it is to be of any service.' Elsewhere he claimed to have 'worked on true Baconian principles, and without any theory collected facts on a wholesale scale'. He did nevertheless start with a *question* in

¹ Cf. the anti-evolutionary remark at *GA* 778 b2-6: 'The ordered and definite works of nature do not possess their character because they developed in a certain way. Rather they develop in a certain way because they *are* that kind of thing, for development depends on the essence and occurs for its sake. Essence does not depend on development.'

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his mind, *viz.* how to account for the modification of species and their adaptation to their habits of life, and two negative hypotheses, that it could not be explained either by the action of the surrounding conditions or by the will of the organisms themselves. J. S. Mill too wrote: 'Without a hypothesis to commence with, we do not even know what end to begin at, what points to enquire into.' In the sixteenth century (to quote Herbert Butterfield), 'people even put forward the view that one should drop all hypotheses and set out simply to assemble a collection of more accurate observations. Tycho Brahé replied to this that it was impossible to sit down just to observe without the guidance of any hypothesis at all.'¹ As for Aristotle's own hypothesis, one must at least grant its contemporary heuristic or fertilizing value: without basing his empirical work on the assumption of purpose in nature, he could never have raised biology from its inchoate state in the fourth century B.C. to the astonishingly high level at which he left it.

The explicit defence of teleology comes in *Phys.* 2 ch. 8. He first states the case of his opponents. They refer natural phenomena to what they called 'necessary' causes: heat, cold and other impersonal forces being what they are, certain results follow 'of necessity', e.g. it rains because vapour rises from the ground and when it reaches colder regions *necessarily* condenses into water and falls again. If the rainfall makes the crops grow, the connexion is purely accidental. (This was insisted on especially by Democritus.) To say that the purpose of the rain is to make the crops grow distorts the truth. So with other natural processes: any beneficial result, such as the growth and development of individuals or the conservation of a species, is due simply to chance and coincidence. Nor do they fail to point out the embarrassing fact for a teleologist that the processes of nature may just as well frustrate what we regard as her ends – and our own – as further them: 'Similarly if anyone's corn is ruined on the threshing-floor, its destruction was not the purpose of the rain, but sheer accident' (198 b21). He illustrates this by the best example of such a theory in the ancient world, the

¹ C. Bernard, *Experimental Medicine* (Eng. tr. 1949), 22; S. Stebbing, *Mod. Introd. to Logic* (1930), 404; Planck, *Phil. of Physics* (1936), 112–5 (the quotation is from p. 115); Darwin as quoted by A. C. Crombie in the *Listener* for 3 December 1959, 977, and G. Pickering, *Creative Malady*, 63; H. Butterfield, *Origins of Mod. Sci.*, 54.

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'proto-Darwinism' of Empedocles. The parts and organs of living bodies appear to be adapted in marvellous ways to the needs of the whole creature. He mentions the way in which the front teeth are sharp for biting and tearing off food, and the molars flat for grinding it. But according to Empedocles such advantageous mutations were originally due to chance. There were once creatures with the parts of their bodies arranged in all sorts of bizarre combinations, and the extinction of all but mankind and the other extant animals had been a matter of the survival of the fittest. Such an evolutionary theory ran counter to Aristotle's belief in inherent purpose, and he did in fact believe the species and genera of animals and plants to be so unvarying as to exclude the possibility of new species arising as the evolutionary theory demands.¹

Against theories of this type Aristotle brings forward first of all the *constancy* of nature. For him what happens 'either always or for the most part' (what might nowadays be called 'the statistical norm') cannot be the result of chance (cf. *Met.* 1026 b 31), so it cannot be by chance that it rains (in Greece) in the winter and is fine in July. If there is a rainstorm in July, it is arguable that that *is* the work of chance. (For this and other examples see *Met.* 1026 b 31 ff.) This only brings out more strongly the contrast which we normally draw between natural and chance events. And since, he continues, the only choice is between events which happen by chance and those that are ordered for a purpose, processes of nature must be ordered for a purpose. We might suspect him of shifting his ground by attributing to chance what according to the earlier philosophers happened by necessity, but it was only what they did themselves. In fact the close relationship between necessity and chance was a commonplace among the Greeks, as we saw in an earlier volume. Empedocles, for whom *Anankē* was a cosmic force, could at the same time write that the elements 'came together as each happened to meet'. He and the atomists were chief among those whom Plato castigated in the tenth book of the *Laws* for equating nature with chance and making things happen 'by chance and of necessity'. The

¹ A particular example of A.'s disapproval of purely mechanical explanations is his criticism of Empedocles's theory of the origin of the vertebrae from a twisting of the foetus which breaks up the backbone (*PA* 640a 19 ff.).

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operation of chance lay not in the necessary event itself, but in its connexion with any beneficial or harmful result of it.¹

He next backs up his case by what he considers a very strong argument from analogy. The analogy drawn is between the operations of nature and those of human art, art being admittedly directed towards a purpose in the mind of the worker. In an essential respect it is complete, namely that (199a9) 'The relations between earlier and later stages are the same in what happens by art as in what happens naturally.' What the relationship is he states in several places, e.g. *Met.* 1050a4; 'What is later to develop is prior in form and essence, as an adult is to a child, or a man to the semen'; and *PA* 646a25; 'What comes later in development is prior in nature, and primary what is last to develop: a house does not exist for the sake of bricks and stones, but they for it.' (Cf. a35-b2.) In other words, art and nature are similar in that both exhibit a *progress* towards order and perfection. In our own operations, the earlier stages are performed in due succession for the purpose of realizing an end, and can be seen to lead up to it. Looking now at natural processes, especially the birth, growth and behaviour of animals and plants, we see that the earlier stages in every case lead up to the final development in the same way as they do in the operations of art. Indeed, he goes on (199a15), the function of the arts is either to carry nature's work a stage further on the same basis, or to imitate it. If then artificial processes are purposeful, so are natural; for (as already quoted) the relation between antecedent and consequent is the same in both. Animal and plant life (the work of spiders, ants and swallows, the function of leaves in protecting fruits and roots in finding nourishment) provide plenty of illustrations.

Against the assumption of purposiveness in nature might be raised (he thinks) the occurrence of monstrous births, producing freakish, malformed or otherwise useless creatures. With this objection in mind, he carries the analogy a stage further. Mistakes and failures in artificial production are admitted without any denial that a purpose was attempted, though missed. Similarly monstrosities may be called

¹ Emped. fr. 59, Plato *Laws* 889b-c. The point is explained in more detail in vol. II, 414-18. A's own account of chance will be fully discussed after the four essential types of causation (ch. XII (1), pp. 233-42 below).

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nature's failures.¹ They occur, of course, 'neither always nor for the most part' and are only evidence that nature as final cause is not omnipotent. Just like the divine Mind in the *Timaeus*, she can be thwarted by necessity, the senseless resistance of matter. 'Nature in one sense acts for a purpose, but in another of necessity.' Hence he speaks of her several times as bringing about the best of all possible alternatives.²

A note at the end of the chapter (199b26) is not immediately clear. It runs:

It is illogical for people to suppose there is no purpose because they do not see that the agent has taken thought. Art in fact does not deliberate either, and if the principles of shipbuilding were inherent in the timber, it would produce the same result by natural processes. If therefore there is purpose in art, so there is in nature. This is seen most clearly when a doctor cures himself. Nature is like him.

To say that in the arts men do not deliberate sounds strange and scarcely defensible.³ There are two ways in which Aristotle might assert it, concerning means or ends. In the *Ethics* (bk 3, 1112b11, 1113b3-4) he says that in the *technai* we do not deliberate at all about ends, but only about means. The doctor (as such) does not deliberate whether he shall heal, the orator whether he shall persuade, or the legislator whether to make good laws, but only how.⁴ No doubt this is his primary thought here, and he seems to argue that this autonomy of the ends of an art automatically settles the question of the means of achieving them. To a certain extent it does: the objectivity of the end does limit the possible amount of doubt and deliberation concerning the means. Given what a house is for, a builder does not have to deliberate whether to build it of stone or cardboard, and the whole

¹ The physiological explanation of such malformed offspring (failure of the semen as efficient cause to master the material provided by the female) is given in the long discussion of them in *GA* bk 4, chh. 3 and 4.

² *An. Post.* 94b27-37; *PA* 658a23, *Cael.* 288a2 and *Id* 704b15 *ἐκ τῶν ἐνδεχομένων*; *Iuv. et sen.* 469a28 *ἐκ τῶν δυνατόν*.

³ In *EN* in fact (1140a9-10) he defines τέχνη as a state of preparedness to make something by true reasoning (μετὰ λόγου ἀληθοῦς).

⁴ Of course, as Cooper says (*Reason and Human Good in A.*, 17-19), a man may not pursue a patient's cause single-mindedly, e.g. if the most efficient method would expose him to infection and his own health takes priority over the patient's in his scheme of values. But A. would reply that in so far as he pursues this ulterior end he is not acting in his capacity as (τὸ) a doctor, but simply as a human being. The case is allowed for in *De anima*, 433a4-6.

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question of what material to use may be decided for him by the district providing only stone or only clay. In the same chapter of the *Ethics* Aristotle quotes writing (calligraphy and spelling, not of course composition) as an art where deliberation about means has disappeared altogether: we do not have to think how the letters are to be formed or (he claims) how the words are to be spelt.

This point about absence of deliberation over means sounds a little sophistical, and in the *Ethics*, where he is discussing the subject of deliberation fully for its own sake, he only tries to maintain that there are *some* arts from which it has disappeared. Among those that do involve deliberation about means he mentions specifically medicine, economics (χρηματιστική) and navigation. The chapter on deliberation justifies us in saying that the brief jotting now before us does not mean that art *never* deliberates, which would be absurd. We may qualify it (as no doubt he did in his lecture) with 'always' or 'in every case', which satisfies his present argument. His opponents maintain that absence of evident deliberation *necessarily* implies absence of purpose, so it is enough to show that purpose is *sometimes* not accompanied by deliberation. What he has chiefly in mind, as the example of ship-building shows, is the point made earlier about the similarity of the order of events in natural and artificial generation. Themistius brings this out well in his paraphrase, which is worth quoting in full (62.24ff. Schenkl):¹

Yes, it is said, but we do not see nature taking thought, as we see people do who are acting with a purpose. But the argument would deny purpose to most of the arts. Even a carpenter does not deliberate whether to saw his plank before planing it, nor a writer how to write alpha and beta, nor, when he wants to write 'Cleon', which of the letters he must write first or second. Similarly a builder does not deliberate whether the foundations or walls or roof ought to be constructed first, and it is the same with a weaver or stonemason. Each of their tasks is determined, and also the *order* (τάξις) which will lead to the end proposed, and every craftsman follows a path already laid down. It is the same in nature, on which art is modelled.

¹ Moreau (*A. et son école*, 112f.) quotes Philoponus, whose explanation is that βούλευσις is a mark not of τέχνη but of lack of τέχνη. It is ignorance that makes a man take thought: the accomplished craftsman no longer needs to (*Phys.* 321.2 Vitelli). I think Themistius is nearer the mark.

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Aristotle's note, then, is a particularly striking restatement of the argument from the resemblance between art and nature. Both alike exhibit a due subordination of means to ends, and on this phenomenon of *orderly progress* is based his case for the presence of purpose in both alike. Whether or not there is deliberation does not affect it one way or the other. 'If the shipbuilding art were incorporated in the material . . .' For wood to be formed into a ship an external agent, man, is necessary; for a seed to be formed into a tree, no such agent is necessary. This is an inessential difference. Fundamentally the two processes remain the same, because both show the same subordination and application of means to ends. If the building up of an oak from an acorn were an art practised by man, instead of being achieved by nature unaided, everyone would exclaim at the intelligence, skill and ingenuity involved. It shows all the marks of purposeful creation as much as, say, the building of a telescope from metal-ore buried in the earth and the grains of sand which become the lens. Aristotle has made the point himself at 199a13-15: if natural products were products not only of nature but also of art, the process would be the same as the natural one.

Aristotle was a biologist, and to biologists teleology has always had a special appeal. Describing the formation of the eye in the human embryo, Sir Charles Sherrington compared the stages in great detail to those in the making of a camera, and added; 'It all sounds like an unskilful, overstated tale which challenges belief.' 'To do the required pertains one would think to the optician's workshop rather than to a growing egg.' He even makes the same point as Aristotle about nature having failures, and attributes them to the intractability of matter.¹ Agnes Arber in *The Natural Philosophy of Plant-form* is (no

¹ *Man on his Nature*, 123, 127; Pelican ed. 1955, 115, 120f. The second quotation appears to have been omitted in 1955. But the example of the eye goes back to Newton (see Flew, *Western Phil.*, 208) and comes to us through Hume's *Cleanthes* (*Dialogues concerning Natural Religion*, ed. Aiken, 28, quoted by Swinburne in *Philos.* 1968, 201) and Paley. (For Paley see Edwards and Pap, 412f.) For a strong attack on it see C. Darrow (*ib.* 432: 'botchwork that any good mechanic would be ashamed to make'!). More *Leitfrüchte* on the subject: J. Z. Young is fascinating on the pineal gland in *Philos.* 1971, esp. pp. 72 and 73; S. A. Kleiner in *Southern J. of Ph.* 1975, 528, says that the concepts of function and purpose have become increasingly suspect to biologists since the mid-19th century, but that this trend has been challenged by L. Wright in *PR* 1973 and W. C. Wimsatt in *Stud. Hist. and Phil. of Sci.* 3, 1-80. Cf. also R. C. Punnett in *Background to Modern Science*, ed. Needham and Pagel, 196: 'We can only understand an organism if we regard it as though produced under the guidance of thought for an end.'

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doubt consciously) more Aristotelian in her expression, and makes Aristotle's point about internal and external causes (p. 296):

This analogy, like all analogies between the works of nature and of art, breaks down on the point that in nature the directiveness *is* the life of the individual elements, and not imposed from the outside... Returning to the analogy of the Roman road, whereas the formal cause in that case was the idea of road-building existing in the Roman mind, if the road had been a living organism [cf. 'If the shipbuilding art had been incorporate in the timber'], the formal cause would have existed within that organism, instead of in a mind external to it.

To understand Aristotle it is of great importance to remember that his teleology demands the actual existence of the *telos* or goal. The hen is prior to the egg both ontologically and chronologically, for every egg has been laid by a pre-existing hen.¹ It is of course perfectly possible to conceive the idea of ordered progress without assuming the actual existence of a perfection at which the progress is directed. That is for example Julian Huxley's position in his *Essays of a Biologist* and later works, and may be called evolutionary, as opposed to emergent, progress.² The idea is that the highest existing thing at any moment of time is the sum of the world and its contents – inorganic and organic nature with man at the head – at the state of evolution which at that moment it has reached. Aristotle remained too much of a Platonist to think like this. For him there could be no progress that was not progress towards *something*, and you could not progress towards something unless it existed. In the metaphor which the term 'emergent' is intended here to suggest, we cannot picture a light object as in the process of rising from the bottom of the sea to the surface unless there is a surface always ahead of it, up to which it is progressing. In Aristotle's view, we and the world are like that object, ever trying to reach the surface, which remains ever above us. To apply the same metaphor to Huxley's, we should have to say that the world is like the

¹ His hypothesis of an eternal, non-evolutionary universe saved him from the hen-or-egg puzzle: his theory required neither a First Hen to lay the First Egg, nor a First Egg from which the First Chicken was hatched. In the individual of course matter as potentiality is prior in time to form, though logically (λογικῶς) posterior (*PA* 646a 35–b 2).

² This use of the terms seems to fit, and will not I hope cause confusion with the theory of 'emergent evolutionism' associated with the name of C. Lloyd Morgan, or that put forward by Popper in *Self and Brain*.

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level sheet of water itself, which is rising and rising – but rising into nothingness, or at least into what was nothingness before and only exists as nature reaches it.

The *telos* of the whole world will concern us greatly later on. It is of course God, according to Aristotle's own rather individual conception of divinity, and the development of things in the natural world, each in its own restricted sphere, is, to borrow Plato's phrase, an assimilation to God as far as possible. At the same time, since nothing in nature can surpass its own specific form, everything has its own *telos*, to realize in itself the form which nature intended it to embody, represented for it directly by the parent animal or plant.¹

Hypothetical necessity. To tie up a loose end, we should note that Aristotle follows his account of nature as purposeful with an appendix on the function of necessity within a teleological scheme.² As a primary cause, replacing purpose, it has been rejected, but as we have seen, it has a place, ancillary to, and at the same time limiting, nature's success in her purpose. Once again he invokes the distinction, familiar from *Phaedo* and *Timaeus*, between true cause and *sine qua non*. It is both necessary and natural that men should be made of flesh and blood, and plants of quite different materials. We cannot do without such expressions as 'Men *must* be made of flesh, blood, etc. and plants *must* be made of other kinds of matter',³ but we ought to be sure what we mean. The necessity here is not absolute but hypothetical or contingent. Democritus and his like understood it to mean 'Men of flesh and blood must be'; but the truth is 'Men must be made of flesh and blood *if* they are to exist at all; but their existence is not a matter of sheer physical necessity, but of something higher.' The others believed that because the nature of the elements was what it was, the world, plants, animals and men came into being automatically. The Platonists (including

¹ A point to be remembered about A.'s teleology is that it is piecemeal rather than universal, or as F. H. A. Marshall has called it, limited; i.e. creatures of a particular species are organized for their own good and that of their species. There is no thought of one sort being ordered with reference to the good of others. (Marshall, introd. to Loeb ed. of *PA*, p. 3. Cf. Wieland in *Articles on A.* 1, 159.) Cf. *EE* 1218a 30–33, Rist, *TAPA* 1965, 339 and 347. On Rist's article see p. 109 n. 1 above.

² *Phys.* 2, ch. 9. Cf. *PA* 639b 21–40a 9, *GC* 337b 14–23, *PA* 642a 32–44.

³ Proximate matter, of course. On the relativity of matter see pp. 230f. below.

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here Aristotle) replies that it was indeed necessary for matter to have such-and-such properties, or potentialities, if plants and animals were to exist, but that was not the reason for their existence. Since final causation was as evident in nature as in human accomplishments, one might as well say that walls arise of necessity because it is the nature of heavier materials to sink and lighter to rise, so stones necessarily go to the bottom and form foundations, earth (the unbaked mud brick), being lighter, rises above them, and wood is found at the top because it is lightest of all. But the real 'cause' of the house being built is the shelter and preservation of people and things. It is similarly absurd to say that saws came into being 'of necessity', because of the properties of iron, though true that *if* saws were to be made, the existence of a material with the properties of iron was necessary. If asked why saws were made, we do not look to the material, but reply, 'Because men needed an instrument to cut wood'. It was still necessary that iron should exist, for otherwise the purpose would have gone unfulfilled; but the purpose is primary, the material secondary.

The natural philosopher, he concludes, should take both kinds of cause into account, final (the end sought) and material,¹ but regard the end as the more important, 'for that is the cause of the matter, not the matter of the end' (200a33).

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'As a starting-point we take it that whatever is produced by nature or art is produced out of what is potentially such-and-such by the agency of what is actually such-and-such' (GA 734 b21). Nature for Aristotle is essentially *in process* towards a series of goals or end-states. Indeed he defines natural objects as 'those which contain within themselves a source of motion and rest', as opposed to the products of art – couches, clothing, etc. – which, *qua* artefacts, have no internal faculty of change; and nature itself as 'the source and cause of motion and rest to *that* in which it [she?] inheres primarily and essentially, as distinct from

¹ Matter and necessity are explicitly identified in the *Physics* (200a30): 'Clearly then the necessary element in nature is what we call matter and its changes'. Cf. GA 734 b36ff., where the example is the part played by heat and cold as necessary but subordinate causes in the formation of the embryo, and the analogy of the arts is drawn again.

² Or potency and act, which I shall sometimes use as less clumsy equivalents.

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incidentally'.¹ But the moment Aristotle set process, involving change and becoming,² at the heart of his philosophy like this, the historical tradition in which he stood faced him with the most famous *aporia* in all Greek thought, the dilemma posed by those who had denied *a priori* the possibility of any motion or change, and challenged anyone who subsequently admitted it to justify himself before he could proceed.

The question which had primarily excited the first Greek philosophers was that of *genesis*. First they asked what the world was made of, and then by what process its creation or evolution was achieved. Into this discussion Parmenides threw his challenge. It did not come to be. All becoming is an illusion. As Aristotle summed it up with his usual incisiveness (*Phys.* 191a27-31): 'A thing must come to be either from what is or from what is not, and neither alternative is possible. What is does not become, for it is already, and nothing could come to be out of what is not; there must be some substratum.' If this contradicted the evidence of our senses, so much the worse for them. Trust in reason, not the senses (*Parm.* fr. 7). This is one of those arguments from abstract *logoi* which in Aristotle's eyes were responsible for so much error among his predecessors. It must be countered by one 'more relevant and closer to nature', as he admiringly called those of Democritus.³

His solution lay in the concept of τὸ δυνατόν ὄν, that which is potentially. It is safest here to avoid the word 'exists'. The potentiality of being is the potentiality of being *x*, since for Aristotle as for Parmenides or anyone else, the idea that the absolutely non-existent could exist potentially would be nonsense. 'Nothing can come out of nothing; there must be a substratum.'⁴ To the brusque challenge of

¹ *Phys.* 192b13-14, 20-23. Bury a wooden spoon. Its wood may germinate, but what will come up will be a tree, not another spoon. The force of nature was in the spoon incidentally, in the wood essentially.

² The single Greek term κίνησις, 'motion', can cover in A. four kinds of change: change of place ('movement' in the usual English sense), of quality (alteration), of size (growth and diminution), and change affecting a thing's being (birth and death, and in general coming into being and perishing). See *Met.* 1069b9-13, 1088a31-33. In the *Physics*, however, he sometimes reduces them to three, excluding γένεσις καὶ φθορά (*Phys.* 243a35, 260a26; but also 201a9-15 and *De an.* 406a12), and he says that locomotion is 'primary' (*Phys.* 261a27).

³ *GC* 316a13 Δ, δ'ὅν φανερὴ οὐκείῳ καὶ φυσικοῖς λόγοις περαισθῆαι. (See p. 197 below).

⁴ Here as always one must remember that A.'s universe was eternal. The things in it come to be and perish, but the whole never. (His proofs of this are in *Cael.* I, chh. 10-12.) On accidental and essential non-being see p. 123 n. 2 below.

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Parmenides, 'It is or it is not' (fr. 8.16), Aristotle opposes his own, as e.g. at *Met.* 994a27-28: 'There is always the intermediate state, *genesis* (coming-to-be), between being and non-being, and the developing subject between what is and what is not.' In the over-simple form in which Parmenides put the question, no answer was possible; but the concept of being was not simple but twofold. A thing could have the potentiality of being in a certain state, or the actuality; and becoming and change were only the emerging into actual being of a matter which already had in it the potentiality of that which it became. The matter which changes must have the potentiality of both states. Since being is thus twofold, everything that undergoes change passes from being potentially to being actually, e.g. from potential whiteness to actual whiteness, and similarly with growth and diminution, so that not only is it possible for something to come to be out of what is not, only *per accidens*, but it is also true that everything comes to be out of what is, i.e. of what is potentially, though it is not in actuality.

I hope the last two sentences (from 'The matter which changes . . .') have conveyed their meaning clearly. They are in fact a translation from Aristotle himself (*Met.* 1069b14-20). The force of the phrase *κατὰ συμβεβηκός*, here rendered by its Latin equivalent, is literally 'in virtue of a concomitant', as opposed to *καθ' αὐτό*, essentially, in virtue of the thing's own nature. It reminds us of the observation that every sensible object is a compound, consisting of a matter qualified at any given moment by one or other of a pair of opposed forms; or we may simply say that it is qualified either by a form or by its *sterēsis* (p. 103 above). That is the 'accident'. That a thing is characterized by the *sterēsis* of a form is not a purely negative statement. It means that the matter does possess the potentiality of realizing that particular form, i.e. its nature is already so far developed as to determine what its proper function ought to be. (The literal meaning of *sterēsis* is deprivation or loss.) Thus the function of an eye is to see. In Aristotle's terms, it is not fully realizing its form, or existing in full actuality, unless it is seeing. So a blind man's eye suffers the *sterēsis* of sight. This could not be said in the same sense of a plant,¹ because nature never intended

¹ It is hopeless to expect A. to use terms consistently. So long as a word was in popular use in several senses, he would freely use it in all of them. It will generally be found, however, that

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it to see. If, however, a plant is grown in the dark, the whiteness of its chlorophyll-starved leaves represents the *sterēsis* of the greenness which it would naturally display, and it may be called potentially green. (This example is mine, not Aristotle's.) To say that a thing has the *sterēsis* of a certain form means, *sensu philosophico* as Bonitz would say, that it possesses a combination of positive qualities such as gives it the potentiality of development in a certain direction. That is how '*sterēsis* itself is form in a sense', as Aristotle himself says at *Phys.* 193 b 19. Also (*Met.* 1048 b 37-49 a 5):

We must distinguish when each thing exists [as that thing] potentially and when it does not; for it is not at any and every time. For instance is earth potentially a man? No, but rather when it has already become seed, and perhaps not even then. [Cf. lines 14-15.] Similarly not everything can be healed, whether by the doctor's art or by chance, but there is a certain kind of thing which can be, and it is this which is potentially healthy.

Only this therefore can properly be described as *unhealthy*, characterized by illness or the *sterēsis* of health. One might say that the four elements were potentially an olive tree, since certainly the olive is composed of them; but that would mean little, since they may equally go to form a dog or a fish. 'If a thing exists in potency, it is not the potency of anything and everything. Different things come from different things' (*Met.* 1069 b 28.)

The doctrine of what *per accidens* is not provides Aristotle with his answer to Parmenides. He can now write (*Phys.* 191 b 13): 'We ourselves agree that nothing comes to be *absolutely* out of what is not,

somewhere he has taken the trouble to list them (*Met.* A is a most useful reference book from this point of view), and it is not difficult to discover which senses are central to his own philosophy. For his enumeration of the senses of *sterēsis* see *Met.* 1021 b 22 ff. and 1046 a 31 ff. At 1021 b 22-24 he even says that 'a plant is said to be deprived (*στέρησιν*) of eyes', because one sense of *sterēsis* is 'if a thing does not have what it is natural to have, even though it is not natural to the thing itself'. The next two senses, however, are those germane to his philosophy: (2) 'if it is natural to have it . . . e.g. a blind man and a mole are deprived in different senses'; (3) 'if and when it is natural to have it' (i.e. at the appropriate age). In this sense the blindness of a newly-born kitten does not count as *sterēsis* of sight because it was not designed by nature to see until later. See *Catt.* 12 a 31-34.

¹ As Sir Kenelm Digby said: 'As long as nature proceedeth in her regular course, . . . so long (I say) it is impossible, that any other thing in the World should grow (for example) out of a little shrunk Akehorne, than a spread vast Oake; or out of a single Bean, than that tall, green, tender plant.' (*Discourse concerning the Vegetation of plants*, 1661; quoted by Agnes Arber, *Nat. Phil. of Plant-form*, 206.)

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but in a sense things do come to be out of what is not, namely *per accidens*: a thing comes to be out of the *sterēsis*, which is "absolutely not",¹ and which does not persist in the result.' The permanent element which does remain through change and development is the matter or substratum (194 b24). The opposites do not change but withdraw.² So Aristotle tells Parmenides that, in pointing out that what is not can never become, he did a real service to philosophy, but he should have realized that individual objects, whole things that can be seen and felt like trees and animals (and it is these that interest Aristotle), are neither one thing nor the other. We are back at the mistake noted by Plato, of confusing the statements 'this cold thing has become hot' and 'coldness has become heat'. The latter is absurd, because coldness is correctly described as '*essentially* not hot'. Cold water or cold metal on the other hand is only not hot *per accidens*; it is cold at the moment in virtue of the presence of coldness in it, but that may at any time leave it, for it has a permanent substratum or *hylē* which is receptive of both conditions. Similarly a blind eye may recover sight, for the *sterēsis* of sight may give place in it to its opposite, the *eidos* of sight itself. It remains absurd to say that blindness could become sight or vice versa.

In this way the doctrine of potency and act is inextricably intertwined with the lesson that every separately existing object in the sensible world is a compound of matter and form. They are only two ways of looking at the same thing.³ Consider a natural object statically, analyse its structure at a given moment, and it will be found to be a compound of matter and form. But since change, growth and

¹ 'Accidental non-being (τὸ μὴ ἐν κατὰ συμβεβηκός) is univocal, whereas 'essential or absolute non-being' (τὸ κατὰ αὐτὸ (ἀπλῶς) μὴ εἶναι) has two senses. There is no confusion, and the distinction is easy to grasp, but perhaps needs to be pointed out. As applied to a *sterēsis*, i.e. one of a pair of opposite forms – say cold – the words 'it is essentially, or absolutely, not' mean that it is essentially not heat, or whatever its opposite is, as distinct from the matter which can assume each opposite and make the concrete object become hot or cold at different times. As a form, it certainly exists (though not in isolation from matter). On the other hand absolute non-being, or 'that which absolutely is not', may be used to convey the concept of absolute non-entity or non-existence, like the not-being of Parmenides.

² Presumably into something else, since they cannot retire into a Platonic world of their own. If so, since formal and efficient causes are identical (p. 225 below), we might have here a first faint stirring of the principle of the conservation of energy. But perhaps A. never consciously asked himself the question.

³ *Phy.* 191b27 ἐκ μὲν δὲ τρόπος οὗτος, ἄλλως δ' ἂν ἐνδέχεται ταῦτά λέγειν κατὰ τὴν δύναμιν καὶ τὴν ἐνέργειαν. Notice too how at *Met.* 1078a30 ὁλικώς replaces δύναμις as the opposite of ἐντελέχεια.

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development are unceasing, ubiquitous and most in need of explanation, this may be expressed dynamically by saying that it is a potentiality striving¹ to reach actuality. The term actuality, or activity (*energeia* or *entelecheia*),² may be applied to the composite whole when it has completed its development and is performing as nature intended, or to the form alone, which as the element determining its specific nature may also be thought of as in a legitimate sense the thing itself. The matter indeed, as we know, must be regarded – relative to a particular act of change – as a mere unformed substratum which, like a block of marble destined to become a statue, is *not* the thing until it has been given form. The identity of matter and form with potency and act is many times repeated. As an easily-remembered example we have the opening of *De an.* bk 2, where, after explaining the triad matter, form and concrete object, he adds: 'Now matter is potentiality, form actuality.'

We should now be able to appreciate Aristotle's definition of motion at *Phys.* 257b6: 'What moves is the movable, i.e. what is potentially in motion but not actually; and the potential progresses towards actuality. *Motion is the incomplete actualization of the movable.*' He adds that the agent which causes the motion must itself be already in actuality, as e.g. what imparts the form of heat must itself be hot; a principle which will acquire great importance as we go on.³

¹ It is in the nature of matter to desire and reach after what is divine, good and desirable (*Phys.* 192a16ff.).

² On the relation between these near-synonyms see Brentano, *Several Senses of Being*, 161 n. 16, and Ross on *Metaph.* II, 245f. on 1047a30, and Chung-Hwan Chen's article in *CQ* 1958. At *Met.* 1050a22 A. says that τοῖοντα ἐνέργεια... συντελεῖ πρὸς τὴν ἐντελέχειαν, and at 1047a30 speaks of the word ἐνέργεια as πρὸς τὴν ἐντελέχειαν συντελεῖσθαι, from which one may conclude that they meant much the same – the opposite conclusion from that of G. A. Blair, *IPQ* 1967, 111. Blair's article should be read critically, but is unfortunately not readily intelligible to a reader not acquainted with the situation and with Greek. (This comment includes his translations.)

³ Pp. 250ff. below. 'Motion' is of course used here in its widest application, to include every sort of change (p. 120 n. 2 above).

The above quoted passage overrules others where κίνησις and ἐνέργεια appear to be identified without qualification, e.g. *Met.* 1047a30 (ὅμοσι γὰρ ἡ ἐνέργεια μέγιστα ἢ κίνησις εἶναι) 1065a13, and *Phys.* 251a9, an obvious case of accidental omission of the qualification in his notes. Here too ἐνέργεια must mean the process of actualization, not the finished state, as the example offered at *Phys.* 201a9 makes clear: 'the entelechy of the potential, as such, is motion', says A.; but he continues, 'e.g. of the alterable, *qua* alterable, it is alteration (ἀλλοίωσις)'. Simplicius puts the point very clearly, *Phys.* 414.1–5 (Brentano, *Several Senses of Being*, 163f. n. 48). (A.'s conception of causation here seems to have something in common with the 'downward

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The problems of change and becoming had proved the greatest crux in Greek philosophy. Few had had the courage to deny them, none had succeeded in explaining them. By his twofold conception of being, potential and actual, Aristotle thought he had solved the riddle, in conjunction with the analysis that revealed the necessity of an unqualified substratum in things capable of being informed to different degrees by qualities in themselves untransformable. But since it is motion and change which primarily demanded explanation, it is the dynamic principles that dominate, and in their application lies most of Aristotelianism. Consider a random example from an outlying sphere, ethics. A burning controversy among the Sophists and Plato had been whether virtue in human beings is natural or contrary to nature. Aristotle says quietly that neither side is right. 'The virtues are implanted in us neither by nature nor contrary to nature. It is in our nature to acquire them, but it is habit that gives us them in full' (*EN* 1103a23). In other words (though the term is not used here) we are potentially virtuous.¹

Definition of dynamis. I have tried to explain the sense of *dynamis* fundamental to Aristotle's philosophy. He did not invent terms, but took over words already familiar, in current usage or previous philosophical discussion, and gave them a special significance. What seems confusing is that his commonsense sympathies led him to use words still in their ordinary meanings even after he had established them for particular purposes in a specialized sense. Ordinarily *dynamis* meant 'power', the ability to affect others rather than the capacity for changing or being affected oneself, and so it is described in the philosophical glossary of *Met. Δ* (1019a15): '*Dynamis* is spoken of in one sense as a source of motion and change in another, or in the agent itself *qua* other. E.g. building is a *dynamis* which does not exist in what is built, but the power of the medical art may exist in the patient, but not *qua*

causation' of D. T. Campbell and R. W. Sperry (Popper, *Self and Brain*, 19, 20, 209.) Cf. *De an.* 431a6-7: 'Motion is the activity of the incomplete. Activity unqualified, i.e. of something completely formed, is different' *Protr. fr.* 14 Ross, 15th line, where *κίνησις* is unmistakably used to express full activity, may possibly represent an earlier stage in A.'s development.

¹ *ἐννοεῖται τοῦ καθευ*, a conception found already in Plato (*Soph.* 247e1, 248c3, *Phdr.* 270d).

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patient.' But in *Met. Θ*, which is entirely devoted to a discussion of potency and act, we find also (1046a11): 'One kind is the *dynamis* of being acted upon,' a source of change in the thing itself which suffers change through the action of an external agent, or of itself considered as external.' An act of motion or change requires agent and patient, and both must be suitable. The patient cannot respond to the influence of the agent unless it possesses the faculty of doing so. This is its *dynamis*. Let rain and sun play upon a seed, and it grows into a plant. A stone subject to the same influence will not. (The final words are explained by the example of the self-cured doctor.) In this sense *dynamis* shows some resemblance to what modern philosophers have called 'dispositional properties', or hypothetical as opposed to categorical: the elasticity of rubber, the brittleness of glass, magnetism in iron. All remain latent until an external agent activates them. Aristotle gives his own examples at 1046a22: 'It is because it possesses a motive principle (*archē*), and because the matter itself is such a principle, that what suffers change does so, each through a different agent. What is oily is combustible, what is yielding is compressible.' (Cf. *De an.* 417a7: combustible material does not burn of itself; it needs *actual* fire to ignite it.) In another sense *dynamis* may be the reverse of a dispositional property, a power of *resistance* to change. So *Met.* 1019a26: 'Moreover states in which things are altogether impassive, unchangeable or not easily altered for the worse, are called potencies; for it is not by having a potency that things are broken, crushed, bent or in general destroyed, but by lacking one and being defective.' I do not myself perceive the 'range' by which in E. Hartman's view (*Substance, Body and Soul*, 52) a potentiality differs from a dispositional property.

Like much else in Aristotle, the conception of potentiality has its roots in Plato. In the aviary simile of the *Theaetetus*² the owner may be said to possess his birds in two senses. All are his, but if he enters the cage and lays hands on one, he *has* it in a different sense. In Aristotle's

² A physical example is the assimilation of food to the body in digestion, as answer to the old query whether nourishment is by interaction of similars or contraries (*De an.* 416a29-b9).

³ *Th.* 197c ff. Cf. esp. 197d: 'In another way he possesses none of the birds, but has a certain *dynamis* concerning them once he has made them available in his own enclosure, to catch and hold any one he likes.' It is the distinction expressed by A. in the *Topics* (129b33) as that between *εχειν* and *χρησθαι*.

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terms, he has them all potentially and this one actually. Plato applies the simile to potential and actual knowledge. The man who has learned Greek knows it even when reading a novel, but his knowledge is not fully actualized. When reading or writing Greek it is called into full actuality. Strictly speaking (but he does not always speak strictly) these are for Aristotle two stages of actuality, to distinguish the lower one from the mere potentiality of the man who knows no Greek but is capable of learning it. He uses the same example: 'Matter is potency, form is act, and that in two divisions corresponding to knowledge and the exercise of it' (*De an.* 412a9). The division as one within potency itself is, however, made both in the *Met.* (1048a33-35) and at *GA* 735a9: 'What is potentially something may be further from or nearer to its own realization, as a geometer when asleep is further than one awake, and when awake further than one engaged in study of his subject.'

Objections to the concept of potentiality. The Megarian School denied the whole concept of potentiality, and as a somewhat similar criticism has been voiced in modern times it will be as well to mention it. They claimed, says Aristotle,¹ that 'only when acting did anything have the power to act': anyone not actually building had not the *dynamis* to build, and so in other cases. This, he replied, is absurd on many counts.

(a) In the crafts, there would be no builders, etc., for to be a builder is precisely to have the *dynamis* to build. But crafts have to be learned, and once learned, can only be lost gradually through forgetfulness or some other cause. If a builder loses his skill when he stops building, how does he regain it next time he wants to build?

(b) If there is no potentiality, nothing will be cold, hot, sweet, etc. unless it is actually being perceived. They would thus be upholding the theory of Protagoras.²

(c) When anyone is not actually seeing or hearing, he will be blind and deaf.

¹ *Met.* Θ ch. 3, our only authority. For Diodorus Cronus see Ross, *Metaph.* II, 244.

² I.e. that things are for each of us what we perceive them to be. The authors of the 'cleverer' theory of sensation in Plato's *Tha.* would have seen no absurdity in this (vol. IV, 77-9).

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(d) What is deprived of possibility is impossible, so according to their doctrine what is not happening cannot happen; but since it is untrue to say of what cannot be that it either is or will be, *their arguments abolish movement and coming-to-be.*

Grote tried to show that in all these criticisms Aristotle has misrepresented the Megarian view. He was answered by Zeller, who at the same time pointed out how the words italicized in (d) revealed the Megarians' motive. They were followers of Parmenides. 'In refuting this claim, Aristotle remarks that it would make all movement and becoming impossible; this was precisely what the Megarians wanted to do.'¹ To this, as we know, Aristotle replied in truly empirical, almost Johnsonian, fashion: the reality of movement and change is self-evident, for they are matters of common experience.

W. T. Stace,² writing as an empiricist, condemns Aristotle's concept of potentiality as meaningless. By saying that an acorn is potentially an oak, he says, Aristotle intended more than the fact that acorns turn into oaks.

It was undoubtedly supposed, not merely that the oak would in the future grow out of the acorn, but that the oak was even *now* in some way present in the acorn, not actually, but potentially. It is this conception which is totally meaningless. For the potential presence of the oak in the acorn is something which could never be experienced by any mind, human or non-human. If it were so experienced, it would be actually existent. In other words 'potentiality' is not an experientible characteristic of anything. It is a concept without any application in any conceivable experience. And it therefore has no meaning.

I hope anyone interested will re-read the account of potentiality in the present chapter and make up his own mind. However, to venture a tentative comment, if potentiality is not an 'experientible' characteristic, what do we experience when we look at an acorn and say correctly, 'If I plant this I can grow an oak'? Not simply something visually different from the sight of a hazel-nut. It is experience that enables us to

¹ Grote, *Pl.* II, 491-4; Zeller II, 1.258 n.1 and 257 n.4. For Euclides and the Megarian school see *HGP* III, 500-6.

² In an article in *Mind* 1935, reprinted in abbreviated form in Edwards and Pap, 694-704. See pp. 703f.

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detect what each will grow into, i.e. the potentiality of each. That potentiality (the *dynamis* or power in a certain direction) is *there*, and is recognized by us when we see the acorn. I doubt if Aristotle thought of the oak as in any sense *present* in the acorn. To call it potentially an oak meant for him only that its nature was so far developed, its matter already so far formed, that if it reached its natural *telos* it could only become an oak. This seems meaningful enough.¹

ADDITIONAL NOTE: THE MEANINGS OF 'PHYSIS'

Aristotle uses *physis* ('nature') in different senses in different contexts, and now is as good a time as any to sum them up.

1. Nature in general, as in 'nature does nothing without a purpose'.
2. The origin (*genesis*) of anything.
3. The fully-developed concrete thing (*syntheton*), a compound of matter and form. (2) and (3) are both illustrated by *Phys.* 193b 12-13: '*physis* in the sense of *genesis* is the path to *physis*'.
4. The form, as when in the same passage he adds: 'If then this is the nature, form too is the nature.' Cf. also the latter part of the next extract.
5. The matter of which anything is made. So *Phys.* 193a 29-31: 'In one sense therefore *physis* is used to signify the first [*i.e.* proximate] underlying matter of things which have in themselves a principle of motion and change, but in another sense it is the shape, the form laid down in the definition.'

¹ The above does not of course pretend to cover the subject of Aristotelian potentiality and modern empiricism, which has recently aroused considerable interest among philosophers. An introduction to the literature may be gained from Mourelatos, 'A.'s "powers" and Modern Empiricism', in *Ratio* 1967.

It would have pleased Aristotle that the concept is now employed more readily by scientists than by philosophers. Thus Monod says on p. 87 of *Chance and Necessity*: 'the overall scheme of a complex multimolecular edifice is contained *in posse* in the structure of its constituent parts, but only comes into actual existence through their assembly'; and on p. 94: 'More highly ordered structures and new features' as they appear 'reveal successively, like a multi-stage fireworks, the latent potentialities of previous levels.'

VIII

THE DIVISIONS OF KNOWLEDGE¹

When Aristotle is called, as he sometimes is, the founder of scientific method, the word 'science' is given a wider meaning than is nowadays usual. We commonly distinguish the scientist from the philosopher and the mathematician no less from the practical man of affairs. 'Science' means primarily the natural sciences, rooted in observation and experiment. The philosopher is the one who goes behind² other subjects, bringing before the bar of reason, to test their truth and falsehood, the hypotheses which the others must accept as axiomatic. Up to Aristotle's time there had been no separation between philosophy and science, or between one science and another, largely because science hardly existed. Earlier thinkers were called *physiologoi*, students of nature, but *physis* was a very wide term, and none of them assembled a systematic collection of data on which to work. Aristotle, a zealous amasser of facts and organizer of a research team, effected for the first time a conscious and deliberate separation, though still confident that the whole field of knowledge fell naturally within the province of one man, or at least of one school. The different branches were separate because they had different principles or starting-points (*archai*), so that 'one cannot prove the theorems of one science by means of another, unless one is subordinate to the other, as optics to geometry or harmonics to arithmetic'. 'One cannot demonstrate by passing from one genus to another, e.g. prove geometrical truths by arithmetic.' Every branch of knowledge involving reason, he says, concerns causes and principles, but they all mark off a particular genus of being and concern themselves with that.³

¹ Merlan's article 'On the terms "Metaphysics" and "Being-qua-being"' in *Monist* 1968 may be recommended as a stimulus to thought on this subject.

² Hence the fashionable taste for names beginning with 'meta', on the analogy of 'metaphysics' (p. 64 n. 2 above), signifying the philosophical foundations of a subject: metamathematics, metaethics, meta-ontology, and so on. There is even (which is surely going too far) a journal called *Metaphilosophy* (including metametaphysics?).

³ *An. Post.* 75 b 14, a 37; *Met.* 1025 b 4-9.

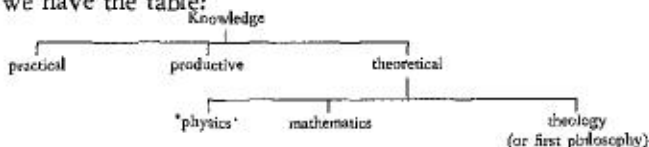
The divisions of knowledge

The main divisions of knowledge according to Aristotle are as follows (from bk E of the *Met.*):

(a) All knowledge¹ is either practical or productive or theoretical² (1025b25).

(b) There are three theoretical philosophies, mathematics, natural philosophy, and theology (1026a18).

So we have the table:



He defines the objects of each of the theoretical sciences. *Physics* (to use the term in its wide Aristotelian sense) 'investigates things capable of movement, usually with regard to their formal being, but as not separable from matter' (1025b26-28; cf. K, 1061b6). The science of nature may sometimes seem to be admitted only on sufferance to the inner sanctum of the theoretical sciences. It is theoretical (disinterested), but concerned with what admits of change, whereas in the strict logic of *An. Post.* (71b9-12, 73a21) the object of knowledge in the full sense cannot be otherwise than it is. But elsewhere Aristotle is less exacting (pp. 172f. below): knowledge is of what is either always or for the most part, here jointly opposed to the random or accidental. (Mure put this well: 'The world of nature changes, but the laws of its changes do not,' *Arist.*, 129.) For him the essential is that it is independent of human action: its subject-matter, though not absolutely unchanging like that of first philosophy, has the cause of its motions within itself, whereas the objects of the practical and productive

¹ A. here uses the word δίδωσι, thought or reasoning. But ἐπιστήμη or φιλοσοφία would have conveyed the same meaning. This is the usual classification, though at *Top.* 105b19 he gives a hint of that into ethics, physics and logic which originated with Xenocrates (fr. 1 Heinze) and became customary in later schools. We must not in any case expect A. always to stick to the same divisions in different contexts. For instance at *Phys.* 198a29 he again posits three classes of systematized knowledge (πραγματικά), one concerned with the Unmoved, a second with what moves but is indestructible, and the third with things perishable. Here the second study is astronomy, for the circling stars and planets were in A.'s view everlasting, and mathematics is omitted. There is no confusion.

² At *Top.* 104b5 A. illustrates the difference between a practical and a theoretical enquiry: to ask whether pleasure is a worthy object of desire is helpful as a guide to action, whereas a question like 'Is the cosmos eternal?' is pursued for the sake of knowledge alone.

The divisions of knowledge

sciences depend for their actualization on an external cause, namely human action and skills. Hence natural philosophy is a theoretical science, though of the second rank.¹

The mathematician studies solely the quantitative aspect of things in abstraction from the rest. 'He eliminates all sensible qualities like weight and lightness . . . heat and cold . . . leaving only quantity and continuity and their attributes as such, and does not study things in any other aspect' (1061a29-35). *Phys.* 1 ch. 2 compares physics and mathematics. Physical bodies themselves have surfaces, lines and so on, though these do not exist apart from material embodiment; but the mathematician does not study them *as* limits of physical bodies but in isolation, for they can be separated in thought and no one is deceived.² His favourite illustration of the difference is the snub and the concave. Snubness is a wholly physical concept, inseparable even in thought from matter (the flesh of the nose), but concavity can be considered as a purely mathematical concept, apart from its manifestation in noses, cups, etc. These widest divisions of science form a hierarchy, according to their distance from matter. Below first philosophy comes mathematics, which in turn is a science superior to those which take matter into account.

Theology is so called only here and in bk K ch. 7, where the tripartite division is repeated. Usually Aristotle talks of 'first philosophy', and in this same chapter of the *Metaphysics* (E1) he raises the question whether its field is universal or covers only a part of what exists. It is the science which tries to answer 'the eternal question, what is it that exists, that is to say, what is Being?'³ (Z, 1028b2-4.) This subject, however, as he now explains, may have two branches.

¹ See *Met.* 1025b18-28, 1005b1-2. A. was spared the thought of test-tube babies, but it is surprising that a Greek, familiar with the cultivation of cereals, vines, olives and other fruits, should have thought of the study of nature as purely theoretical.

² I.e. no one is misled into thinking that they lead a separate existence (as the Platonists, he adds, deceived people about the Forms). A.'s view is reflected in Mill (*System of Logic* bk II, ch. 5.1): 'We are thinking, all the time, of precisely such objects as we have seen and touched, and with all the properties which naturally belong to them; but for scientific convenience, we feign them to be divested of all properties, except those in regard to which we design to consider them.' At *Met.* 1073b6-8 A. says that geometry and the science of number are not concerned with any substance. Julia Annas writes on A.'s conception of mathematics in *Met. M and N*, 29-31.

³ οὐσία, the word also translated 'substance'.

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(1) First philosophy tries to discover what in the world around us may properly be called real. In *Met. Z* ch. 2 he repeats what he said in the *Categories* (pp. 140f. below), that in its most obvious sense the term substance is applicable to corporeal, physical objects like plants and animals and their parts, the four elements and their productions including the heavenly bodies. The philosopher therefore tries to explain the nature of all these so as to answer the question: in virtue of what may they be said to be what they are? If this question does not mean so much to us, it certainly meant much to Aristotle, who had to combat Plato's outright denial of Being to the world of Becoming.

(2) Nothing existing in the physical world is fully actual; everything contains an element of matter, that is, of unrealized potentiality.¹ Part of the task, therefore, of the philosophy which takes all Being for its province is to find out whether there exists any being which is pure actuality, unencumbered with matter which is potentiality.

1026a10-13, 27-32. If there is something eternal, unmoved and separate,² the knowledge of it is plainly theoretical, yet not physics or mathematics but prior to both... If no other substance exists but the physical, physics must be the primary science; but if there is an unmoved substance, it is prior and its science is first philosophy, and universal because it is first. Its province is the whole field of Being for its own sake, what it is and its attributes *qua* Being.

That there is a supra-natural, i.e. unmoved and divine Being, is of course Aristotle's belief (see e.g. *Met.* 1005a32-b2), so first philosophy does have this second function. In its first aspect, the search for reality in the physical world, it is the subject of *Met. Z*. In its capacity as *theologikē*, the discovery and description of some separately existing perfect being or beings, it is the subject of the self-contained treatise known as *Met. Λ*. As Aristotle reserves this topic till later (1027a19), so shall we. Here he ends with a terse, epigrammatic dictum,³ that knowledge of the supreme Being is made universal by its primacy.

¹ Is it unfair to see a vestige of the rejected Platonism here, of γινώμενα not being fully ὄντα? A. would deny it strenuously – physical individuals are the πρότεροι οὐδοί – but early habits of thought might still be subconsciously at work, and affect the solution which he ultimately offers.

² In the repetition at K ch. 7 he adds ὅτι παρὰ πᾶσιν ἐκείνῳ.

³ In Leszl's explanation of the status of theology (*Ontology*, 179) one misses any mention of the causal function of God, and what he says elsewhere about the causal aspect of the Unmoved

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Since God, the first Unmoved Mover, is the final cause of the whole universe and everything in it, to know him completely would be to understand the universe.¹

Movers (pp. 191, 196) is not altogether reassuring. Merlan in *JHI* 1963, 290, summarizes the then state of the question whether the subject-matter of A.'s metaphysics is only non-material reality (i.e. metaphysics = theology) or includes the *oóvta* of physical things. He refers to the opinions of Natorp, Ivánka and Cherniss.

¹ So at least I regard it. Evans (*Dialectic*, 42ff., 67) sees a more strictly philosophical argument, which he explains in terms of the relationship between a universal and the primary member of a series.

IX

LOGIC, THE TOOL OF PHILOSOPHY¹*Introduction*

In the foregoing classification of the whole field of knowledge, there is no place for logic. Logic, called by Aristotle analytics, was not for him one of the sciences but the necessary preliminary to all science. 'The attempts', he says, 'of some who discourse on truth and the terms on which something may be accepted as true, show the effect of a lack of training in analytics.'² One must come to a subject forearmed with this, not pick it up as one goes along' (*Met.* 1005 b 2-5). Logic is thus for Aristotle neither a part of philosophy and science nor yet unrelated to them, and the name *organon* (tool, instrument) was appropriately given, even if not by Aristotle himself, to the collection of his logical treatises.³ It is close to what is meant today by 'scientific method',

¹ Only a brief introduction sketch will be offered here, containing little about the relation of Aristotelian to modern logic and making little use of symbolism which he did not use himself. I hope it will be of some benefit to students even if of little or none to accomplished logicians. Łukasiewicz (*A.'s Syll.*, 47) suggests that 'philosophers' should 'cease to write about logic or its history before having acquired a solid knowledge of what is called "mathematical logic"'. It would otherwise be a waste of time for them as well as for their readers.' I hope a historian of A.'s thought in general may be excused this test. (On what A. would think of mathematical logicians see Allan, *Phil. of A.*, 129f.) As an authority on A.'s logic itself, Łukasiewicz should be approached with caution. What he offers, as his complete title suggests and Düring has rightly said (*Arist.*, 91), is 'the modern judgement of Aristotelian logic'. (See also the judicious remarks of Patzig, *A.'s Theory of the Syllogism*, xiv.) I shall try to show how logic served as the *organon* of the philosopher in his investigations into knowledge and being. Even in his logic A. aimed at more than answering questions of the form: 'What exactly is meant by such-and-such a sentence?' For a fuller introduction see W. and M. Kneale, *Development of Logic*, ch. 2, 'A.'s *Organon*', 23-100. Le Blond's *Logique et méthode chez A.* is an excellent work which links logic to the wider aspects of philosophy as A. would have wished. Cf. too on the genetic side Solmsen, *Entwicklung der arist. Logik*.

² *Met.* 1005 b 2. This passage tells somewhat against the opinion of M. Kneale (*D. of L.*, 7) that 'A.'s word "analytics" refers to his treatises rather than to their subject-matter'. It is true that he often refers to *The Analytics* in other works, and to make analytics co-extensive with logic perhaps goes too far. If, however, inference and demonstration (the subject of the *Analytics*) are preliminary and instrumental to philosophy proper, this must be true *a fortiori* of the study of terms and propositions which occupies the *Categories* and *De interpretatione*.

³ Cf. Alex. in *Top.* 74.29: 'Logic occupies in philosophy the place of an *organon*.' (*Logikē* is here used for the first time in extant literature in the sense of 'logic'.) But A. himself uses *organon* similarly, e.g. *Top.* 163 b 9-11: the ability to hold simultaneously in the mind the

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where the word 'scientific' is used in its proper, all-embracing sense.¹ Whatever name we give it, it is an analysis of the actual processes of thought, expressed as they must be in language, carried out with the aim of exposing inaccuracies and helping us to reason more correctly. For Aristotle it meant a particular application of one of the two fundamental principles which we have looked at. It is an example of the abstraction of form, the process of examining a number of individual instances and then, reflecting on the results of the examination, mentally isolating from their individual matter the common properties which go to make up the *eidos* of the group.

Scientific method is concerned with two things, related but not identical: (i) the formal correctness (consistency) of an argument, and (ii) truth. Suppose it is argued: All metals melt under sufficient heat, lead is a metal, therefore lead will melt if sufficiently heated. The argument is valid and we are content, if scarcely excited. But suppose the argument is: All white men are honest, Bill Sikes is a white man, therefore Bill Sikes is honest. This argument is formally as valid² as the first, but does not content us. The conclusion is not true, because the major premise was not true.³ The rules of logic guard us against arguing faultily, but they cannot guarantee that we select the right premises.

To study arguments in their formal aspects we must use symbols. Instead of mentioning the things or classes which are the *matter* of argument, we use a letter or other sign which, intrinsically meaningless, is assumed to be replaceable by any thing or class of things that we consequences of each of two hypotheses, besides its usefulness in dialectical debate, 'is no mean instrument (*organon*) for acquiring knowledge and philosophical wisdom'. Who first applied the term as a title to the treatises is not known. During thinks Andronicus himself a possibility (*Ant. u. Abendland* 1954, 123), but others (Ross, Mure) mention the sixth century.

¹ As Grene says (*Portrait of A.*, 69), 'We may, therefore, legitimately consider Aristotelian logic not as the first adumbration of a formal system but as a discipline enabling the student to acquire scientific knowledge.' Such a system, if, like A.'s, it is intended to be universally applicable, must surely be formal, but cf. the contrast which she draws with Leibniz on p. 71. Mure put it (*Arist.*, 211 n.2) that 'he never teaches a logic of mere validity'.

² Meaning that if it were expressed formally by variables instead of concrete terms it would be faultless. For Patzig validity includes truth. ('For if a syllogism is valid, whatever values are substituted for its variables the resulting implication must be true. (That is what validity means.)' *Syllogism*, 148.) By contrast Stebbing differentiates between truth of the conclusion or premises and validity of the reasoning (*Mod. Introd. to Logic*, 83), and Ross writes (*Analytics*, 29) 'validity depends on form'.

³ A. admits that false premises may lead to a true conclusion, but it will be what he calls true as to the fact only, not the reason for it (*An. Pr.* 53b8-10). Knowledge on the other hand must be of the 'why' as well as the 'what' (90a15).

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choose. With these illustrative symbols ('variables'), the statement of the argument becomes a formula or framework into which individual arguments can be fitted and against which they can be checked. Only by their use can form be properly exhibited, a fact obvious to Aristotle, to whom form was paramount in logic as in everything else. Thus his statement of the first-figure syllogism, of which we have just seen an example, is (*An. Pr.* 25 b 37):

If A is predicated of all B and B is predicated of all C, A must be predicated of all C.

Here something has been begun which could be carried much further, and even at its beginning has affinities with algebraic notation. If in this embryonic form it can scarcely be called mathematical logic, it does contain the germ of what goes by that name today. Łukasiewicz wrote (*A.'s Syll.*, 7): 'The introduction of variables is one of Aristotle's greatest inventions. It is almost incredible that till now, as far as I know, no one philosopher or philologist has drawn attention to this most important fact. I venture to say that they must all have been bad mathematicians, for every mathematician knows that the introduction of variables into arithmetic began a new epoch in that science.'¹

We may call Aristotle the founder of logic, then, first because he was the first to think of the expression of our thought as itself the subject of a special science; secondly, he was the first to study the forms of our thought in abstraction from its matter. This has in recent times been considered the proper goal of logic, if not of all philosophy. Between his time and ours the possibility and the importance of developing the study and enlarging its scope were not generally recognized, and it is chiefly in the last hundred years that Aristotle's work has been appreciably surpassed. Since popular thought is generally well in arrears of that of professional philosophers and scientists, this means that the mental operations of most of us are (for the most part unconsciously) cast in an Aristotelian mould.

¹ More on this in connexion with the syllogism, pp. 156ff. below. His use of symbols was not, however, confined to demonstrating syllogistic form, but occurs in physical arguments, e.g. at *Phys.* 249 b 31: 'If a mover A moves an object B a distance C in time D...', and so the exposition continues with E, F, G, and H. Similarly at 214 a 31ff., b 22ff., 232 a 22ff. A contrast to Łukasiewicz is A. C. Lloyd in *Mind* 1911, 123. He denies that A.'s symbols are true variables, and speaks of the 'tragedy' of Greek mathematics.

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Contents of the Organon. The elements of thought as expressed in words (and one cannot make them an object of study otherwise) are, in order of complexity, terms (single words), propositions or questions (i.e. combinations of terms; Aristotle does not consider commands),¹ and inferences (which combine propositions). In the *Categories* Aristotle describes and classifies terms and phrases, while the *De interpretatione* is concerned with propositions and questions. Both are preliminary to the *Prior Analytics*, which deals with the laws of inference, seen as co-extensive with the syllogism. The *Posterior Analytics* passes to the second of the two divisions of scientific method, the application of formal logic to the discovery of truth. In its formal aspect, inference is called by Aristotle *sylogismos*, and it is sufficient that it should be consistent. When concerned with the facts of nature, with truth and falsehood, it becomes demonstration (*apodeixis*). The *Topics* is a handbook of dialectic, the technique of arguing successfully, though not necessarily truthfully, against all comers on any subject. It is naturally something of a mixture, containing items relative to all the rest. In any case we must not expect Aristotle to keep his subjects in wholly separate compartments.

(1) THE CATEGORIES OF BEING: PRIMARY AND SECONDARY SUBSTANCE

I have said that the *Categories*² studies terms, from which it might be concluded that it is a purely linguistic, or at the most logical, exercise.

¹ A. does not ignore the existence of other forms of speech besides propositions, e.g. prayers, but considers them to belong to rhetoric and poetry rather than logic (*De inv.* 17a3-7). For a criticism see Flew, *Western Phil.*, 322f.; but to A. logic is the instrument of science, which deals only with facts.

² Whether A. actually wrote the *Cat.* has been doubted, especially by Jaeger (see his *Aristotle*, 46 with n. 3), but it is generally agreed that its content at least is Aristotelian. Some base a case against it on the Jaegerian *a priori* view of his steady development away from Plato (pp. 14ff. above). See de Vogel, *Symp. Ar.* 1, 255. G. Collé in his ed. of the *Organon* makes a case for its being an early lecture, given its present form when A. was teaching in the Lyceum, which is mentioned as an illustration of the category of place. This met with Düring's approval (*Gnomon* 1956, 207), but Mure had justly pointed out that mention of this well-known haunt of Socrates is no evidence of lateness (*Arist.*, 268 n. 1, against Jaeger, *Aristotle*, 46 n. 3). See also von Fritz in *AGPh* 1931 and L. M. de Rijk, *Mnemos.* 1951. Its doctrine is not only sound Aristotelianism,

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This is not so. Of the *Categories* it cannot be said, as Łukasiewicz said with satisfaction of the *Prior Analytics*, that it is 'entirely free from any philosophic contamination'. In Aristotle's eyes one cannot use a word correctly unless one can relate it to the reality which one wishes to express by it. If, as so often happens, a word is used ambiguously, to express more than one thing, its various senses – that is, the realities to which it corresponds in different contexts – must be carefully distinguished. The *Categories* is devoted to clarifying our various ideas of what it is to *be*, and quickly involves us in a discussion of the nature of substance. This has been censured as a confusion of metaphysics with logic,¹ but language and logic are only tools for conveying to others what we think and believe; and what we wish to convey – among other things of course, but primarily if we are philosophers, whether realists,

but as Ross and others have said, is at the basis of most of A.'s other works. Its authenticity was never suspected in antiquity. During (*Arist.*, 54f.) speaks of its authenticity and stratification. Trans. and Comm. by J. L. Ackrill. Moravcsik's *Aristotle* contains essays on the *Catt.* by Cook Wilson and himself. Notice also L. M. de Rijk, *The Place of the Categories of Being in A.'s Philosophy* and Ross's short account on pp. 1002–10 of vol. 1 of his *Metaphysics*. What follows here probably does not do justice to Anton's interesting article 'Some Observations on A.'s Theory of Categories' in the periodical *Diotima* for 1975. Finally there is now available in English Brentano's *On the Several Senses of Being in A.* (German original 1862), of which ch. 5 is devoted to the *Catt.* C. M. Gillespie's article 'The Aristotelian Categories' (which concludes that the *Catt.* is a genuine early work) has been reprinted as ch. 1 of *Articles on A.* 3, 1979. See also A. Graeser, 'Probleme der Kategorielehre des A.' in *Studia Philosophica* 1977 and W. Schuppe, *Die aristotelischen Kategorien*.

¹ E.g. Łukasiewicz accuses A. of 'inexactitude' in speaking of 'things' (using the words *ὄντα* and *οὐσθέντα*) being predicated of other things (*An. Pr.* 43a25ff.): 'The given classification is not a division of things but a division of terms.' (On this see Patzig, *Syllogism*, 5ff.) Cf. his apparently indifferent use of *ὄντα* (1a20) and *λεγόμενα* in the *Categories*. So too G. E. R. Lloyd, *Arist.*, 113: 'The categories are primarily intended as a classification of reality of the things signified by the terms, rather than of the signifying terms themselves.'

If this means that A. when using words had in mind their meaning rather than treating them as symbols with no more content than *x* or *y*, the so-called confusion was essential to his philosophy. His indifference to the distinction appears in his use of the expressions 'predicated of' and 'present in' a subject. What is predicated, according to Łukasiewicz (p. 6), is a term, but what is *in* something must be the attribute expressed by the term. (For the distinction see pp. 142–3 below, and on the general point cf. Kneale, *D. of L.*, 27.) Again we have *De int.* 17a38, where he says that some things (*πράγματα*) are universal and some not, 'and by universal I mean what is naturally predicated of many'. 'Names are the signs of concepts, and so mediately the signs of things.' (Owens, *Doctrine of Being*, 120.)

Leszl has a sensible note on p. 58 of his *Ontology*: 'In my actual treatment in the present work I will sometimes talk of our conceptual apparatus and sometimes of the way in which things actually are organized (e.g. by being divided into categories), but I should not be taken as regarding Aristotle as being committed either to a completely objectivist point of view or to one that gives a preponderant role to our conceptual apparatus. The fact is that Aristotle himself tends to talk naturally as an objectivist, but does not raise the issue in a sufficiently explicit way.'

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nominalists, phenomenologists or whatever – is our belief about what really exists (τὸ ὄν in Greek) or is true (also τὸ ὄν).

After a brief exposition of the difference between synonyms, homonyms and paronyms,¹ Aristotle starts from the distinction between 'things said in combination' and 'things said without combination', i.e. between single terms and propositions.² Terms, he claims, by themselves are neither true nor false, since to utter words like 'man', 'white', 'runs', 'wine' separately is not to make a statement at all. But a combination of terms may be true or false, and must be one or the other if it forms a proposition, affirming or denying. The rest of the short work is a study of terms, which, he suggests, fall into ten classes or *kategoriai*. *Kategoria* means 'predicate',³ and shows what Aristotle had in mind in making the classification. The terms or phrases which he is considering stand for all that can be said about, or predicated of, those individual things or 'thises'⁴ which he has always in mind as the inescapable realities that demand the philosopher's attention – *this* man, *this* horse. These categories he enumerates as ten: substance, quantity, quality, relation, place where, time when, position, state, acting and being acted on. He illustrates each with brief examples, not intended to replace a definition, but simply to assure the reader of his drift.⁵ For substance; (a) man or (a) horse;⁶ quality: white or literate; quantity:

¹ An Academic classification attributed also to Speusippus. See vol. v, 465f. συνώνυμα are not synonyms in our sense, words with the same meaning, but *things* with the same name and nature, as animals are the same whether instantiated in man or ox (A.'s example). On the whole subject see Owens, *Doctrine of Being*, 49ff., and for further discussions (Hambruch, Barnes) Tarán in *Hermes* 1978.

² For his present purpose A. so limits it, though not quite accurately. Obviously 'white man' is a combination of terms as much as 'Socrates is white', and 'things said without combination' may include more than one word. His word for combination (συνπλοκή, lit. 'interweaving') is that used by Plato in the *Sophist* to denote the union of noun and verb which constitutes a proposition (262c; Moravcsik in *Aristotle*, 126f.). A.'s debt to P.'s discussion in the present passage is obvious.

³ A. also calls them τὰ κοινά, to indicate that they are the only completely universal predicates. See *Phys.* 200b34–36, *Met.* 1070b1–2.

⁴ On the meaning of A.'s favourite phrase for an individual, τὸδε τι ('a certain this'), see Ross, *Metaph.* 1, 247. τὸδε has deictic force. One can point to a τὸδε τι and say 'There it is'. That sensible individuals cannot be predicated of anything else is expressly stated at *An. Pr.* 43a25.

⁵ ὡς τὸ πρῶτον εἰρησιν, 1b27. The immediate reference of verbs like κείσθαι and ἔχειν would not be so obvious as that of their English equivalents. In Greek all the examples except that of place consist of one word.

⁶ It was probably convenient for A. at this moment that Greek has no indefinite article. The difference between primary and secondary substance, individual and universal, is to be explained a

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two- or three-cubits-long; relation: double, half, larger; place: in the Lyceum, in the agora; time: yesterday, last year; position: lying, sitting; state: is shod, is armed; acting: cuts, burns; being acted on: is cut, is burned.

The chief interest of the list is that it shows Aristotle prepared, probably at an early date, simply to enumerate a number of ways in which the word 'is' can be used. Much has happened since the Sophists set their Parmenidean puzzles based on the assumption that the verb 'to be' was univocal: to want Clinias to 'be no longer' what he is (i.e. ignorant) was to wish for his death (Plato *Euthyd.* 283d). We are simply presented with a list – no agonizing over whether such equivocity is possible – and it has even been suggested that the whole doctrine was developed in the Academy and only taken over by Aristotle.¹ In any case the main distinction has been made between substance and the other nine, and further subdivision was a minor matter. In other works he takes the doctrine for granted as established, yet the detailed composition of the list of ten categories is unimportant and seems to have been experimental; for instance at *Phys.* 225b5 he names eight only.² This is not surprising, for not all of them seem to represent fundamental distinctions between modes of being. Moreover it is possible to classify them on quite a different basis from that of the categories, e.g. into potential and actual or accidental and essential, as he points out in *Met.* E ch. 2.

Primary and secondary substance

Catt. 2a11–17. Substance in the properest, primary and most intensive sense of the word is what is neither predicated of a subject nor present in a subject, e.g. an individual man or horse. 'Secondary substance' is the name given to the species in which the things called primary substances are

little later. He can distinguish the individual when he likes: cf. 1b21 ὁ ἀνθρώπος καθ' ὅπουκε μέντοι λέγεται τοῦ τινὸς ἀνθρώπου.

¹ Anscombe cites 'awake' among predicates 'which certainly fall under none of the categories'. Is it not a τίς, falling under ἕν in the list?

² See Ross, *Arist.*, 22 with n. 6, Burnet, *Ethics*, p. 1.

³ 'About the number of the categories he takes no pains to be consistent' (Ross, *loc.*). But in the last century Brentano (*Several Senses*, 50f.) followed Brandis and Zeller in maintaining that the number of categories (either ten or eight) was deliberately chosen by A. and offered as correct and complete. The list of ten in the *Catt.* is repeated exactly in the *Topics* (103b21–23).

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included, and also the genera of those species. Thus the individual man is in the species man, and the genus of the species is animal. These then – man and animal – are called secondary substances.

2b3. Everything except primary substances is either predicated of primary substances as subjects or else present in them. Therefore without the primary substances there can be none of the rest. Of secondary substances the species is more of a substance¹ than the genus, for it is nearer the primary substance.

Aristotle's categories fall under two broad heads, the first – substance – standing apart from the rest, which may be grouped together as the various ways in which substances are qualified. In view of the supreme importance of the notions of a substance or substantial being (*δύ* or *οὐσία*) in Aristotle's philosophy,² we must pay particular attention to his formal definition of it, though he has much more to say about it than is to be found in the *Organon*.³ His use of 'predicated of' and 'present in' a subject may sound arbitrary, but has been clearly explained (1a20). What is predicated⁴ of a subject is the species or genus to which it belongs, as 'man' is predicated of John Smith. Present in a subject are its attributes, e.g. paleness or courage are in John Smith.⁵ The distinction is important, because species and genera are secondary substances, but instances of a quality like white are not (3b3–23). Species and genera are of course universals, but Aristotle

¹ We might wish to say 'more substantial', but the Greek is *μᾶλλον οὐσία*. The use of the comparative adverb with the noun, and indeed the whole idea of being more or less of a substance, sounds strange, and just hints at the great *aporia* which will later emerge, the *aporia* concerning the ontological status of universals. For the moment the meaning is plain enough.

² I still prefer 'substance' to 'reality' as the usual translation of *οὐσία*, in spite of the objections of Charlton (*Phys.* 1 and 11, 56), who says that it has 'none of the connotations of the English "substance" or Latin "substantia"'. But a colour or a smell is real (*δύ*; see *Met.* 1061a8–10) though not strictly a substance, only an attribute of a substance. It should not be difficult to avoid any confusion between *οὐσία* and *ὑποκείμενον*. (Evans's remarks in *Dialectic*, 15, are more moderate.)

³ See ch. XI below. For further explanations of the primary and subordinate meanings of *οὐσία* (the doctrine of *πρὸς δύ* relationship or 'focal meaning' as Owen has christened it) see *Met.* I ch. 2 *ab initio*. ('Being' is used in various ways, but with reference to one and the same subject, not equivocally'), and also Z, 1030a34–b, K3 *ab initio*.

⁴ Or said: *κατηγορεῖσθαι* and *λέγεσθαι* are used indifferently (*pace* Anton in *Diotima* 1975, 76).

⁵ Many have written on the distinction, among the more recent von Fritz, 'Once more καθ' ὑποκείμενον and ἐν ὑποκείμενῳ', in *Phron.* 1958; Chung Hwan Chen, 'On A.'s Two Expressions καθ' ὑποκείμενον λέγεσθαι and ἐν ὑποκείμενῳ εἶναι', *Phron.* 1957; J. Duerlinger, 'Predication and Inherence in A.'s Categories', *Phron.* 1970 (with ref. to Ackrill and other earlier discussions). Anscombe gives her own explanation and examples in *Three Phils.*, 9. Add the discussion between Owen and R. E. Allen in *Phron.* 1965 and 1969.

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here treats the attribute as particular, the paleness in John Smith,¹ though whiteness as such is a universal, not predicated of Smith but inherent in its own individuals, the several patches of white colour. Some things therefore can be both predicated of something and in something, only not the same thing; e.g. knowledge is present in the soul but predicated of its species literacy.²

So substance is reduced by definition to what we knew it was for Aristotle, the individual.³ Since it alone had independent existence, it alone deserved to be called substance or being (*ousia*) in the full and proper sense. Here his reaction against Plato appears at its strongest and is concisely summed up in the *Posterior Analytics* (77a 5-9, on the subject of demonstration). 'For demonstration to be possible it is not necessary that there should be [Platonic] Forms, i.e. a One apart from the many, but it must be true to say that there is one *throughout* the many.⁴ Without this there will be no universal, and if the universal does not exist, there will be no middle term, and hence no demonstration.' Again, at *Met.* 1086 b 5, 'Without the universal, knowledge is impossible; the difficulty about the Forms arose from their separation [from particulars].' The Forms, in the sense of species and genera, true substances for Plato, are relegated to the status of predicates of real things, of which the species is nearer to substance than its genus, the narrower to the more general (*Catt.* 2 b 7, again a reversal of Platonism). They approach substances more nearly than do attributes, and Aristotle therefore grants them the title of secondary substances, deriving a sort of being from the primary.⁵ This he does with obvious reluctance,

¹ τὸ τὶ λευκόν, 1 a 27. On this point see Allan, *Catt. and De int.*, 74f., Duerlinger *Phron.* 1970, 183ff., Annas in *Phron.* 1974 (commenting on an earlier article by Barrington Jones).

² On 'predicated of' and 'present in' see Anscombe in *Three Phils.*, 7-9. R. E. Allen says (*Exegesis and Argument*, 367): 'If Socrates is just, there is, according to the *Categories*, an instance of justice in him.' This suggests to me that the idea of 'present in' may be a lingering vestige of Platonism. One can hardly help thinking of the 'largeness in us' of *Pho.* 105d.

³ The description of sensible individuals as the subjects of all predication and never themselves predicates is not confined to the *Catt.* See *An. Pr.* 43 a 25-29 and *An. Post.* 71 a 23-24. In the *Met.* it is usually applied to οὐσιᾶ.

⁴ κατά, the word usually translated in logical contexts 'predicated of', a development of its meaning in Plato's *Meno*, 73d. Musicianship exists only in the musicians who display it (p. 103 above).

⁵ On the contention of Ross and others that substance cannot exist without qualities any more than qualities can exist without substance, see Anscombe, *Three Phils.*, 10f., E. Hartman, *Substance*, 15-17.

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because from the ontological or metaphysical point of view he is unwilling to admit that they are substances at all. Metaphysics investigates the nature of the real ('being *qua* being, and what pertains to it *qua* being', *Met.* 1005a13), and it is against Aristotle's principles to call anything real except independently existing individuals. Nevertheless in logic, the instrument of scientific knowledge, there was a compelling reason why he had to admit them among substances.

We have seen how reality was to become knowable, namely by the philosopher's examination of a set of particulars in order to extract their common form. It is a development of the Socratic method. When Socrates asks 'What is justice?' or 'What is virtue?', naming in fact a class of actions, and his companion starts by mentioning an instance of that class and saying 'It is that', Socrates makes it his business to lead him on from enumeration of instances to a grasp of the *eidos* common to them all, expression of which supplies the definition of the general term with which they started. When the philosopher has described by genus and differentiae the *infima species* to which an individual belongs – what Plato called its atomic Form – he can go no further towards defining that individual; that is, he can say no more about it as an object of scientific, demonstrable knowledge (*epistēmē*). The further differences between two members of the same *infima species* elude verbal definition. We necessarily perceive things one by one, but knowledge is of the universal (*An. Post.* 87b38). This Aristotle saw as a crux; it would appear at the same time that the realities demanding explanation are individuals and that there can be no knowledge of them (for so one cannot avoid translating *epistēmē*) because, as such, they have no definable essence. 'Of individual sensible substances there is neither definition nor demonstration' (*Met.* 1039b27–29); and as he says, 'all *epistēmē* is with *logos*' (reasoning accomplished through words) (*An. Post.* 100b10). This 'most intractable and urgent of all problems', as he called it, has been touched on in vol. v¹ in a comparison with

¹ v, 414f. See also *Met.* 999a24, quoted *ib.* 61, and *PA* 644a25: particulars are 'formally undifferentiated'. The problem figured in the lost *De ideis* (fr. 3 Ross): 'The sciences are concerned with something other than individuals, for individuals are infinitely many and indefinable, whereas the sciences deal with things defined' (Plato's lesson at *Phil.* 16d–e). Notice again A.'s carefree attitude to terminology. παρὰ τὰ καθ' ἑκάστη here, like παρὰ τὰ πολλὰ at *An. Post.* 10 means the same as κατὰ πολλῶν at *An. Post.* 77a5–6, where παρὰ is applied to the rejected

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Plato, and will recur in a fuller discussion of the concept of substance. Briefly the solution is that *epistēmē* is not our only means of acquaintance with the world of nature. Ultimately it comes from sensation and what he calls *nous* or *noesis*.¹ In vol. V I emphasized the universality of Aristotle's problem, and as a reminder will only add one more to our scientific witnesses. 'Science', wrote the physicist Jacques Monod, 'can neither say nor do anything about a unique occurrence. It can only consider events which form a class.'²

In spite of Aristotle's loyalty to the commonsense principle that only individuals have independent existence, this need not have worried him unduly. One understands an individual, as far as is humanly possible, by abstracting and studying the specific form which it shares with others of its kind. Each specimen is a compound of form and matter, and if the matter of each eludes definition, it is for reasons which make it at the same time entirely unimportant. 'The problem posed at the end of the *Theaetetus* about the unknowability of the particular may indeed remain, but may also be deemed trivial' (Iris Murdoch, *The Fire and the Sun*, 47). This is obviously true of pure or primary matter, which is by definition quite featureless, simply a substratum in which some *eidos* always inheres. When matter is called, as it often is, the principle of individuation,³ this matter by which we (i.e. our senses) tell one Siamese cat from another cannot be pure matter, but it is matter informed at so low a level as to be stripped of all the qualities which members of the species have in common. What remains, Aristotle

Platonic Forms. No change of doctrine is implied. Though P. was wrong to make forms χωριστά ὁπλῶς, they are still χωριστά λόγῳ (p. 219) below.

¹ For these and their relation to *epistēmē* see pp. 183f. below.

² *Chance and Necessity*, 136. This does not necessarily imply an Aristotelian theory of form. On the contrary, cf. Needham, *Hist. of Embryol.*, 59: 'As for the formal cause, Bacon expressly excluded it from physics, and it quietly disappeared as soon as men saw that scientific laws depended on the repeatableness of phenomena, and that anything unique or individual stood outside the scope of science.'

³ For matter as principle of differentiation between individuals see *Met.* 1034a27 (ἕτερον μὲν διὰ τὴν ὕλην... ταῦτό δὲ τῷ εἶδει), 1069b29, 1074a33. J. E. Boodin in *JHI* 1943, 184, translates οὐ ποιεῖ δὲ διαφορὰν ἡ ὕλη at 1058b6 'matter does not create a difference', and seems to argue from this that matter is not a source of differentiation. But it seems to mean rather 'matter does not constitute a (specific) differentia'. Cf. Ross's summary (*Metaph.* II, 103): 'Whiteness does not make a differentiation of man; for colour belongs to man on his material side, and matter does not make a differentia. Individual men are not species of man, though their flesh and bones are different.'

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might with some justification believe, is in each instance philosophically negligible, so that he has a right to say that he knows the specimen when he understands its character as a member of a defined *infima species*.

Justified or not, the important point for his logic is that he did believe this, namely that only species or higher universals can be the objects of discursive thought – thought-processes in so far as they can be put into words – and discursive thought is the subject of logic. Hence when he speaks as a logician his unit must be the species and not the individual; and he could not deny the name of substance altogether to that which was to be the unit in his logical system. He calls it therefore substance in a secondary sense. (See also ch. XI on Substances.)

Substance is included in the list of categories or predicables (1b26), but a little later (2a11–14) described as primarily what is not predicated of anything else. This should not cause difficulty. Substance as a category is not any particular example of a substance, but the universal, the class of all substances as such, or the term (namely *ousia*) denoting that class, as the language of 1b25–26 makes clear. It is only the individual substances themselves, substances in the primary sense, that are not predicable of anything. ‘Substance’ is a predicate; Socrates and my cat Whiskers are not.¹

(2) DEFINITION, PROPRIUM, GENUS AND ACCIDENT

Aristotle has also enumerated in a different way the relations in which a predicate may stand to its subject. This second scheme cuts across the categories² and is more important both as a permanent framework of his thought and for its influence on later philosophy. It shows him still progressing on lines laid down by Socrates and Plato, and he introduces it thus (*Top.* 101b17, trans. Pickard-Cambridge):

Every proposition³ and every problem indicates either a genus or a

¹ Using the words of 1a21 (p. 140 n. 6 above) one may say ἡ οὐσία καθ’ ὑποκειμένου λέγεται τῆς τινὸς οὐσίας.

² For its relation to them see *Top.* 1.9, and S. Mansion’s paper in *Symp. Ar.* III on the categories in the *Topics*.

³ πρότερον, defined at *An. Pr.* 24a16 as ‘a form of words which affirms or denies one thing of another’. I would tentatively suggest, though Ross thought otherwise (see his *Analytics*, 288, 290), that προτείνω still means ‘to stretch’, as a line between two points, boundaries or landmarks (ἄποι: hence A.’s use of the word in logic to mean what has come down to us through

Definition, proprium, genus and accident

peculiarity or an accident – for the differentia too, applying as it does to a class (or genus), should be ranked together with the genus. Since, however, of what is peculiar to anything part signifies its essence, while part does not, let us adopt the terminology which is generally current about these things and speak of it as a 'property'. What we have said, then, makes it clear that according to our present division, the elements turn out to be four, all told, namely either property or definition or genus or accident.

Here then are four types of predicate or descriptive formula, one or more of which must be stated in any proposition about the subject: its definition (*ὅρος*), proprium (*ἴδιον*; I shall use this word in preference to Pickard-Cambridge's 'property'), genus (*γένος*) and accident (*συμβεβηκός*). He proceeds to explain them in turn (101 b 37ff.).

A definition states the essence of its subject, to use the customary translation of Aristotle's famous phrase *τὸ τί ἦν εἶναι αὐτῷ*, literally 'the what-it-is-to-be-that-thing'.¹

A proprium is a single attribute which belongs necessarily to the subject, and to nothing else, but is not a part of its essence and therefore not included in the definition. Aristotle instances the faculty of learning to read as a proprium of the human race.

The genus is what can be predicated of several species in common, in spite of their specific differences, and counts as part of their being. It must be mentioned in the definition, but is not the whole of it. To say

Latin as a *term*, which the *πρότασις* connects with another term, *terminus* being simply the Latin for *ὅρος*. This would be consistent with the definition of *πρὸς τινα εἶναι* at *Top.* 164 b 4 as 'making several into one'. *πρότασις* itself acquired a more specialized meaning as the premise of a syllogism. In dialectic it could even be a question, i.e. one in the form of a proposition put interrogatively ('Is it true that ...?') rather than an offer of alternatives ('Is it so or not?') (101 b 28–36). But A. is perhaps not quite consistent here. Cf. *An. Pr.* 24 b 1–2. Ross notes that A. is apparently the first to use the word *πρότασις*, and to give *ὅρος* the sense of 'term of a proposition.'

¹ Regarding the imperfect as equivalent to a continuous, or (perhaps better) timeless, present, somewhat like the 'gnomic' use of the aorist in verbs which have one. I cannot easily relate Kahn's 'being-what-it-is' either to the Greek or to the required meaning, as Grene does (*Portrait of A.*, 256f.). Alexander *ad loc.* suggests the reason why A. was not content with the simple language of Antisthenes: 'A definition is a formula signifying what a thing is' (*τί ἦν ἢ ἐστίν*, D.L. 6.3). This is insufficient because it does not distinguish a definition from a mere statement of the genus. To the question 'What is a man?', the answer 'An animal' is correct, but does not describe his essence – what it really means to be a man (*Alex. Top.* 42.13; see Antisthenes frs. 45 and 46 Caizzi). The definition of man must point to what is *exclusively* human. Cf. *An. Post.* 96 a 24–b 14 on the constituents of definable essence. It must be added, however, that A. himself frequently uses *τὸ τί ἐστίν* as the equivalent of *τὸ τί ἦν εἶναι*. Owens has a long passage on *τὸ τί ἦν εἶναι* (*Doctrine of Being*, 93–5). His notes are a mine of information on the history of its interpretation, but I do not find his own account entirely satisfactory. In particular the dative to which the phrase is regularly linked receives terdy and inadequate attention.

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'Man is an animal' is to take a step towards defining him, but no more, since there are other animals besides man.

An accident is an attribute which may or may not belong to a subject, without affecting its essence, e.g. of a man, being seated (Aristotle's example) or having fair hair. Strictly speaking therefore it is an intruder in this list, in which only species are being considered as subjects. But one cannot well define a proprium without at the same time implying, by exclusion, the nature of an accident. Knowledge of the one implies knowledge of the other.

Elsewhere, however, we may be surprised to encounter what sounds like 'essential accidents',¹ which must obviously be distinguished from the accidents of the *Topics* text. They are more closely linked to the literal meaning of the word usually translated 'accident', namely what 'goes along with' something, for they are characteristics always and necessarily present in the subject though not a part of its definition. Thus 'plane figure bounded by three straight lines' is a complete definition of a triangle, but in every triangle the sum of its internal angles must equal two right angles, and this property therefore is an 'essential concomitant' of the triangle (*Met.* 1025a30). In this sense it is simply a different expression for what in the *Topics* is called a proprium.

For a quick illustration, take a circle. We may say of it:

1. A circle is a plane figure bounded by a line which is everywhere equidistant from the same point. This is its definition, telling what it is to be a circle.

2. A circle is a plane figure. This gives its genus, telling part but not all of what it means to be a circle. It does not yet isolate it completely from everything else.

3. A circle is such that an angle in the segment subtending the diameter is a right angle. This describes a proprium of the circle. If it is a circle this must be true of it, and it cannot be true of anything else. But it does not itself express the essence, nor answer the question, What was it for it to be a circle?

4. A circle may have a diameter of four inches. If it does, that is an

¹ συμβεβηκότα καθ' αὐτό, e.g. *Phys.* 193b27, 203b33 (and see also Bonitz, *Index*, 713b43ff.). Regularly of course καθ' αὐτό and κατά συμβεβηκός are mutually antithetic.

Inference

accident. A difference of size would not have affected its being a circle, i.e. its essence.

These are the ways in which a predicate may be attached to its subject, whereby, in Aristotle's view, a proposition is formed. (This undue emphasis on the subject-predicate form of proposition has often been pointed out as a fault.) His *De interpretatione*, in Sir David Ross's words, 'traces with passionate interest the possible linguistic varieties of the proposition'. Those who share this passion may be referred to the short but difficult treatise itself.¹

(3) INFERENCE

As propositions exhibited the relations between terms, inference, or reasoning from premises, brings propositions themselves into logical relationships with each other. Aristotle's word for it is *sylogismos*, which with its cognate verb occurs a number of times in Plato in a general sense, sometimes to be translated 'reckoning up', 'working out' or 'understanding'.² For Aristotle it meant the drawing of conclusions from premises, deductive reasoning or, in Aristotle's eyes, reasoning in general. (Induction itself is treated formally as a species of syllogism. See pp. 187ff. below.) It includes syllogism *per se*, purely as a formal argument expressible with symbols, and two main sub-classes which bring it into relation with experience: *apodeixis* (demonstration) or the apodeictic syllogism (*An. Pr.* 68 b 10, *An. Post.* 74 b 10-11), which enlists reason in the cause of science,³ and dialectic, the chief use of which is to vanquish an opponent in debate.

¹ Aided by Ackrill's translation (1963), with notes and a brief bibliography. In particular, Ackrill has a full discussion of the rebuttal of determinism in ch. 9 (pp. 132-42), which has aroused so much interest in recent years, and refers to articles on the subject in his bibliography, p. 157. Further ref. to this argument (known from A.'s illustration as the 'sea-battle' argument), including Anscombe, will be found in Düring, *Arist.*, 68 n. 105, Dorothea Frede, *A. und die 'Seeschlacht'* (1970) and V. R. McKim, 'Fatalism and the Future: A's Way Out', *R. of Metaph.* 1971-2, nn. 5-7 (pp. 82f.). See too Flew's discussion of the problem, *Western Phil.*, 244ff., and Anne Dickason, 'A., the Sea Fight and the Cloud' in *JHP* 1976. Taylor's article from *PR* 1957 has been reprinted in Anton and Kustas, *Essays*, 522-45 (bibliography on p. 542, n. 2.) A.'s error is briefly pointed out by Patzig, *Syllogism*, 24f. Add now L. D. Harris, 'Solving the "Naval Battle"', *FAS* n.s. 78 (1978) 45-6.

² E.g. *Tim.* 87c, *Pol.* 280a9, *Rep.* 531d. *Gorg.* 498e10 on the other hand (*συλλογισμὸν . . . ἐκ τῶν ὁμολογούμενων*) describes the procedure as understood by Aristotle.

³ See pp. 170ff. below.

Logic, the tool of philosophy

(a) *Dialectic*¹

Dialectic is the subject of the treatise called *Topics*,² from *topoi* (lit. 'places'), described in the *Rhetoric* (1358a12) as 'arguments applicable in common to questions of ethics, the natural sciences, politics and many heterogeneous subjects'.³ It employs both syllogistic and inductive reasoning,⁴ but is most commonly referred to as one of two contrasted applications of the syllogism, the other being apodeictic (scientific or philosophical reasoning). It might therefore seem more appropriate to speak of both of these after the syllogism itself. On the other hand the way through syllogism, *apodeixis* and induction leads straight to the heart of the problem of knowledge and its foundations, and to interrupt this magisterial progress in order to accommodate something which in the eyes of the author himself was not relevant to

¹ As Owen says in the preface to *Symp. Ar.* III, 'The place and the value of A.'s dialectic in philosophy have seized the attention of scholars increasingly in recent years.' Perhaps too much so, considering its comparatively lowly station in his own eyes. Some may agree with Brunschwig in the Budé *Topics* (p. vi) that A.'s fame as philosopher and logician will certainly not depend on a book which (so he said) is no longer much read and which one feels little remorse for not reading. In the very next year (1968) were published the proceedings of the third *Symposium Aristotelicum*, containing sixteen papers entirely devoted to his dialectic. See also J. D. G. Evans's favourable account, *A.'s Concept of Dialectic* (1977) and pr. 1 ch. 1 of Le Blond's *Logique et méthode chez A.* For a full analysis of the detailed precepts of the middle books as well as the more general advice of bks 1 and 8, one still cannot improve on the 165-page ninth chapter of Grote's *Aristotle*. E. Weil's essay, 'The Place of Logic in A.'s Thought' (Eng. tr. in *Articles on A.* 1), is in fact mainly concerned with the *Topics* and dialectic.

As to questions of development and relative chronology, I agree with Solmsen (*Symp. Ar.* III, 52f.) that 'it seems preferable to study the status of Aristotle's dialectic without becoming involved in these controversial subjects'. *An. Pr.* refers to *Top.* at 24b13 and 46a28, and *Top.* contains ref. to *An. Pr.* (162a11, b32; also *SE* 165b9).

² Including the *Sophistici Elenchi*, a kind of appendix to the *Topics* sometimes referred to as *Top.* bk 9. Its end is noteworthy as (a) an example of something written out in full for oral delivery; and (b) containing, in Grote's words, 'a brief but memorable recapitulation of the *Analytica* and *Topica* considered as one scheme'.

³ The notion of a *topos* is analysed by W. A. de Pater in *Les Topiques d'A.*, ch. 2. More briefly, see S. Raphael in *Phron.* 1974, 153f. For Leszl, *topoi* are 'logical rules' (*Ontology*, 38-9); his section on dialectic offers a clear account.

⁴ From the opening chapter one would assume that the method of dialectic was entirely syllogistic (δ διαλεκτικὸς συλλογισμὸς, 100a22; see also 161a36, 162a16), but cf. 105a10-12, 157a18-20. To understand the four types of predicate is, as Raphael rightly says (*Phron.* 1974, 156), a necessary preparation for syllogistic reasoning, and they are therefore explained early in the treatise (bk 1, chli. 4-5; see pp. 146-9 above). The reader should be warned that many believe (strangely to my mind) the dialectic of the *Topics* to be wholly 'a presyllogistic exercise' (Raphael, *loc.*, 166). The generally accepted thesis of its priority to *An. Pr.* goes back to Brandis in 1833. See Kapp, *Syllogistic*, 36.

Inference: dialectic

philosophy at all,¹ could only be an irritation. But the choice of order is in the reader's hands.

The name 'dialectic' is familiar from Plato, but the concept has changed almost out of recognition. From the *Republic* (book 7) we know it as the coping-stone of all the sciences, the final, highest study of the true philosopher, who bases his arguments not on opinion but on the truth (534 b), leading him to a comprehension of the essence or reality of everything and finally to a grasp of the Form of Good, supreme cause both of the other Forms and through them of the world of human experience. In Aristotle it reverts to a much humbler station, closer to its original meaning ('skill in talking') and to that given to it by the Sophists. It retains the method of question and answer (*Crat.* 390c, *Rep.* 534d), but for Aristotle this simply emphasizes its unphilosophical character; by that method, he says, one can never demonstrate the real nature of anything (*SE* 172a15). Its primary aim is not truth at all, but victory in a battle of wits, and its arguments are always *ad hominem*.² In contrast to the philosophic dialectician of the *Republic*, Aristotle's dialectician is not concerned with the truth of his premises, but only with their conformity to a currently held opinion, whether lay or expert.³ Since Protagoras, 'verbal contests' or debating duels had been a speciality of the Sophists, and from Aristotle we can see that they were set pieces conducted in his own school according to elaborate rules. Even the duration was fixed, the questions must be so framed as to invite answers of 'yes' and 'no' only, and so on.⁴ The respondent undertook to defend a thesis, which might be the paradoxical tenet of a single philosopher (like the impossibility of contradiction maintained by Antisthenes) or a commonly held belief;⁵ and it was the questioner's task to trip him into making an obviously untrue or

¹ See e.g. *Top.* 105 b 30, 155 b 7. Moraux claims (*Symp. Ar.* 111, 110) that the distinction between dialectic and philosophy is a new feature of bk 8, not made in the central books, but one has only to read them to see that their whole purpose is alien to philosophy as A. understood it.

² πρὸς ἑσπρίαν, which sometimes necessitates concealing one's hand (155 b 26-28).

³ See the opening words, 100a18-20. But it is often repeated. Cf. 100b21, 105b30, *SE* 165b3, *Met.* 995b23, *An. Pr.* 46a2-10, *An. Post.* 81b18. (I have touched on this subject in vol. 11, 82.)

⁴ 161a10 ('Some people raise objections which it would take longer to answer than the time allowed for the discussion in progress'); 158a14-17.

⁵ *Top.* 1 chh. 11 and 12, especially 104a8ff. b 19ff.; also 105b19ff. Cf. Moraux, *Symp. Ar.* 111, 278f.

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absurd statement. The respondent may not even have chosen his own thesis, and it is open to him, if cornered, to dissociate himself from it, claiming that an impossible or absurd conclusion is not his fault but the subject's! He may for instance undertake to maintain *ex persona Heracliti* that good and evil are the same. Moreover the two champions may exchange roles.¹

The object of dialectic, then, as the first sentence of the *Topics* puts it, is 'to discover a procedure whereby we shall be able to reason, about any problem set before us, from received opinions, and in our turn stand up to the arguments of others without self-contradiction'. Aristotle distinguishes it not only from philosophy itself, based on demonstration from premises known to be true, but from forms of argument which he still regards with disfavour, such as sophistic and eristic. From rhetoric it differs only outwardly, in being conducted by man-to-man discussion instead of public speaking. Rhetoric is in fact its 'counterpart', 'semblance' or even a branch of it. Only by these two techniques can one draw opposite conclusions indifferently. Neither is a science of any definite subject, both represent simply a certain facility in producing arguments. Aristotle admits frankly that the dialectician, prepared as he is to argue on any subject, does not speak from knowledge like a man discussing his own speciality, but relies on general principles common to every science, art or faculty.²

Aristotle righteously distinguishes his dialectic from the disreputable arts of sophistic, eristic and agonistic, all closely related to each other. Eristic and agonistic were the arts of the Sophist according to Plato (*Soph.* 231e), and eristic and sophistic syllogisms are equated by Aristotle at *Top.* 162a16-17 and *SE* 171b8. The men are distinguished solely by their motives: sophists are out for fame and money, eristics solely for victory, by fair means or foul (*SE* 171b23-29). Sophistic, Aristotle claims, only *appears* to do what dialectic *does*, that is, genuinely test the views of those who claim to know but do not,³

¹ *Top.* 159a20-22, b30-31.

² *SE* 170a36. See also for this paragraph *Rhet.* 1354a1, 1356a30, 1355a34, 1359b12.

³ *Met.* 1004b26, *SE* 171b3-7. The spirit of Socrates still lives! A. has learned much from Plato's *Sophist*, e.g. the question of seeming without being (the sophists' 'hiding place') no longer troubles him. Nevertheless in the *Metaphysics* dialectic is united with sophistic as not concerned with the attributes of *ὄντα* *qua* *ὄντα* nor with Being itself *qua* Being.

Inference: dialectic

and its premises are only bogus, not genuinely believed, opinions (165b7). The sophistic or eristic syllogism is only an apparent syllogism (or at least irrelevant, *SE* 169b20-23), and the same applies to the agonistic.¹ The dialectician of course takes part in *agōnes*, but the typical agonistic betrays himself by a tendency to lose his temper (*SE* 169a23) and to judge by the arguments attributed to him at 165b12ff., a rather petty mind.

In spite of Aristotle's righteous indignation at the unfair tactics of others (*SE* 171b21-25), his own instruction-manual makes it difficult to credit his protestations about the superiority of dialectic to its wicked 'neighbour' (183b2) sophistic as of a genuine to a counterfeit art. The dialectician is trained to talk on any subject without real knowledge, which in Plato (*Soph.* 232b-33a) is the mark of the Sophist. Like the Sophist he regularly engages in contests with an opponent.² The *Topics* teaches him to argue, like Protagoras, on both sides of the same question. He must not only study sophistic refutations but be able to produce them, and in dialectic it is sometimes necessary to use sophistic ploys (172b5-8, 111b32ff.). For us this makes it tantalisingly difficult to know whether a philosophical statement introduced as premise of a dialectical argument represents Aristotle's own view or not.³ What sound like serious contributions to philosophy are introduced as moves in the dialectical game. All alike are *topoi*, to be used constructively or destructively as the occasion requires. The method has its value for philosophy, as we shall see, but that is an incidental bonus. Here are a few random examples of dialectical technique.

(111b12-16.) If you are at a loss for a handle against your opponent's thesis, look among the definitions of the subject in hand, *whether real or apparent*, and if one is not enough, use several. It will be easier to attack someone committed to a definition, for definitions are easier targets.

(156b18-20) One should occasionally bring an objection against oneself, for the appearance of arguing impartially allays the answerer's suspicions.

¹ Since *eris* = strife and *agōn* = contest, there can hardly be much difference between them.

² With *πρὸς ἑαυτὸν* (p. 151 n. 2 above) cf. *SE* 170a12-23 *πρὸς ἑαυτὸν*.

³ Cf. de Vogel's essay in *Symp. Ar.* 111 on A.'s attitude to Plato as revealed by the *Topics*, and its criticism by Owen in the same volume.

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(157a1-5.) [It is useful] also to spin out the argument and put in things of no use to it, like people who draw misleading diagrams; for amid so much it is not easy to pinpoint the fallacy.

What is the value of this dubious-sounding technique, to which Aristotle devotes the equivalent of 250 printed pages? It is useful, he thought, in three fields (101a25-b4).

(1) First comes training (*gymnasia*). Its use here, he says, is obvious, since to be in possession of a method must fit us better to argue about any subject proposed, and dialectic teaches method. The *Topics* shows that a course of dialectical disputations formed part of the curriculum of his own school, and in detail how they were conducted and the recipes for success.¹ As training or testing exercises they are expressly distinguished from instruction, which must always seek to impart truth (159a26-30, 161a24-29). It brings to life the bare sentence of Diogenes Laertius (3.5) that Aristotle trained his pupils to contend on a set theme (*thesis*) and practised them in rhetoric. (Unlike Plato he did not despise this sister-art to dialectic, but carried on his popular classes (pp. 41, 44 above) as well as writing a practical manual on the subject.) In this first aim he had a Platonic model, for the second part of the *Parmenides* is by its own confession an exercise in Aristotelian-type dialectic carried out for purposes of training.²

(2) Secondly it is useful for casual conversational encounters. With its aid we can meet people on their own ground, argue from their premises, and if these are faulty show them up. Here speaks the man who, as we have seen (pp. 91f.), was convinced that every sincere belief contains a kernel of truth. Equipped with a dialectical training, he trusted himself to discover it and to reject the errors.

(3) Lastly, though of its nature incapable of contributing positively to the store of philosophical knowledge, dialectic is a useful adjunct to philosophy and science because to see the difficulties on both sides of a subject makes it easier to sift the true from the false. We have observed

¹ On dialectical 'jousts', their conduct, rules and conventions, see especially Moraux's essay in *Symp. Ar.* 21.

² See *Parm.* 135c-136a. For reasons given in vol. v, 36, I think Plato expressly prevents us from identifying the young respondent with our Aristotle, but in choosing one of that name he may have intended us to associate them in our minds, and the possibility is exciting.

Inference: dialectic

the application of this to philosophical questions in *Metaphysics B*.¹ It even has a bearing on the discovery of the first principles of particular sciences, which cannot be reached by demonstration, since every demonstration has to presuppose them.² Here dialectic is especially relevant, 'for', he claims, 'since its function is critical, it opens the way to the first principles (*archai*) of every science'.

Not all dialectic is competitive. Aristotle also mentions dialectical discussions held 'not in rivalry but for testing and investigation', and claims to be the first to lay down rules for them (159a32-37). In two of its aspects it is *peirastic* and *exetastic*,³ meaning respectively testing or probing and examining critically. As *peirastic* it tests, Socratically, men rather than theories:

172a30ff. Even the unskilled use dialectic or *peirastic* in some way, for everyone tries to test the pretensions to some extent... Everyone in fact engages in refutation, undertaking as amateurs what the dialectician does professionally, for a dialectician is a man who tests by syllogistic technique.

There can be such an art, he continues, different from the arts of demonstration, and capable of applying tests in any subjects on general principles.

To conclude, dialectic is obviously an aid to mental agility and clear thinking in general (detecting ambiguities, being alive to resemblances and differences, seeing through specious arguments and so on), such as cannot but assist the philosopher; but at the same time the bulk of Aristotle's instructions and advice show it as a fiercely competitive pursuit, conducted according to set rules between two people, interrogator and respondent. Only if no opponent is available are we reduced to arguing with ourselves (163b3). Philosophy is the pursuit of knowledge; dialectic at its best is criticism of pretended knowledge.⁴

¹ P. 90 above. Note the importance of διαπορῆσαι in both treatises (101a35, 995a28), and cf. *Top.* 163b9-12, where τὸ δυνάσθαι συναρᾶν καὶ συναρῶμενοι recalls Plato's ὁ γὰρ συνοπτικός διαλεκτικός. The relations between the two dialectics have their subtleties, and in spite of many discussions (e.g. in *Symp. Ar.* vi), are probably not yet fully worked out.

² Pp. 173f. below may throw light on this.

³ *Exetastic*, 101b3. *Peirastic* is a part or kind of dialectic (μέρος, διαλεκτική τις, *SE* 169b25, 171b4), though classified separately at 165a38-39.

⁴ ἵεται δ' ἡ διαλεκτική περαστική περὶ ὧν ἡ φιλοσοφία γνωριστική, *Met.* 1004b25. As examples of dialectical method in A. himself, G. Frappier in *Laval Th. et Ph.* 1977 refers to the

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(b) *The Syllogism*¹

We must remember that Aristotle undertook the study of syllogism as a stage on the way to the study of scientific method.

Sir David Ross

The giants of nineteenth-century exegesis of the syllogism, such as Prantl and Maier, have come under heavy fire from recent expositors like Łukasiewicz and Patzig, in particular for the link which they saw between Aristotle's logic and his metaphysics. Thus Patzig writes on p. 83 of his book that 'the theory that Aristotle's syllogistic depends and is founded on the principles of his so-called conceptual metaphysics . . . has blocked, and does still block, the path to a true understanding of the nature of logic'.² Our present aim is to understand the mind of Aristotle in all its many facets, rather than to re-write a familiar chapter in the history of logic. In that history it is impossible to exaggerate the influence, up to a mere century ago, of Aristotle's syllogistic system of reasoning. Since the rapid widening of the field by the development of mathematical logic and the logic of propositions, logicians do not entirely agree in their estimates. Most still praise him for his introduction of variables, as entitling him to be called the inventor of formal logic, while at the same time criticizing him severely for the narrowness and incompleteness of his system (for we can no longer say with Kant that since Aristotle logic 'has not been able to advance a single step, and is thus to all appearance a closed and completed body of

examinations of previous theories prefixed to many of the treatises, and as a particular illustration looks at some arguments in *De an.* bk 1.

¹ A reference to G. Patzig, *A's Theory of the Syllogism*, Eng. trans by J. Barnes 1968 (revised by the author; there is also a third German edition of 1969), renders the mention of earlier works superfluous, for besides being the best available work on the subject, it has an extensive bibliography. (Ref. to 'Patzig' hereafter are to the English version of this work.) Essential are also Łukasiewicz, *A's Syll.* (2nd ed. 1957, hereafter 'Łukasiewicz') and the introduction to Ross's edition of the *Analytica*. (See his preface for a few outstanding older works.) E. Kapp's article on 'Syllogistic' in the *RE* has appeared in English trans. in *Articles on A.* 1. For a discussion mainly devoted to Patzig's work see Offenberger, *Zur modernen Deutung der ar. Syllogistik* in *AGPh* 1971; and for a stimulating review of Łukasiewicz, Austin in *Mind* 1952. The beginner will find the rules of the syllogism simply set out by Stebbing, *Mod. Introd. to Logic*, 86ff.

² For examples see Patzig *o.c.* 87 n. 36, and cf. pp. 79 and 194 (but also the admission on p. xvi). The criticisms can be severe. What Maier wrote shows, in the eyes of Łukasiewicz, 'ignorance of logic' (*A's Syll.*, 50), is 'logically nonsense' or a 'logical absurdity' (p. 37), 'manifestly false' (p. 12). Prantl too shows 'entire ignorance of logic' (p. 35). 'From the standpoint of logic', the work of both these once respected commentators 'is useless' (pp. 36, 47).

Inference: the syllogism

doctrine'); and their general verdict depends on how much weight they attach to one or the other of these aspects. Łukasiewicz found it 'almost incredible' that to his knowledge neither philosophers nor philologists had drawn attention to the introduction of variables as one of Aristotle's greatest inventions, and concluded that they must all have been bad mathematicians.² For Ross, Aristotle's theory of the syllogism 'will always be regarded as the indispensable foundation of formal logic'; by using variables he 'makes it plain that validity depends on form, and thus becomes the originator of formal logic'. A. C. Lloyd was unusual in denying Aristotle the merit of having led the way to formal logic, on the ground that his syllogistic is not only narrow but *incapable* of extension, and his variables are not true variables but only abbreviations.³

Syllogism as such (as distinct from its applications in dialectic and demonstration) is exhaustively treated in the *Prior Analytics*, which defines it at the outset thus (24b18):

A syllogism is a formula⁴ in which, certain things having been laid down, something different from them comes about of necessity through their being what they are.

This is a remarkably wide definition, indeed a definition of inference⁵ in general, and it is true that in his logical works Aristotle did try to reduce all inference to syllogistic form. In particular he is censured for three faults of omission:

1. He takes account only of the subject-predicate relation between terms, a practice facilitated by Plato's and his own conception of a proposition as essentially composed of noun and verb.⁶ Modern logic

² *Critique of Pure Reason*, trans. Kemp Smith.

³ *A.'s Syll.*, 7f. The generalization is much too sweeping. See Austin, *Mind* 1952, 396f.

⁴ Ross, *Analytics*, 29, 39; Lloyd in *Mind* 1951, 123. In the same passage Lloyd speaks of the 'tragedy' of Greek mathematics.

⁵ *Logos*. 'Argument' (Allan), 'discourse' (Stebbing and Kapp's translator), 'Rede' or 'Gespräch' (Kapp). Perhaps 'form of speech'.

⁶ I speak of inference rather than proof, as fitting better with the 'something different' to which A. claims that the syllogism leads. But Patzig, a meticulous writer, often uses the word 'proof', and Duerlinger has maintained that a syllogism is an argument introduced in support of something, a proof for a proposition already stated, rather than an inference, that is, the drawing of a conclusion from premises. (For Duerlinger's work on the syllogism see Bibliography.)

⁷ Plato *Soph.* 262 d (Cornford, *PTK*, 307f.); Arist. *Rhet.* 1404 b 25. For a comment on A.'s neglect of relational arguments see Allan, *Phil. of A.*, 141f.

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recognizes such relationships as 'greater than', 'equal to', 'to the right of' as different in kind from that of subject to predicate. To be fair to Aristotle, however, the belief that every correctly-formed proposition must attribute a predicate to a subject prevailed until the publication of Russell and Whitehead's *Principia Mathematica* in the present century. Ross found at least partial justification for Aristotle in the fact that many propositions use the subject-predicate relationship as well as the special relation on which they are based. 'If we say *A* is equal to *B*, we say that *A* is related to *B* by the relation of equality, but we also say that *A* is related to *equality to B* by the subject-predicate relation.'¹ He adds that while the varieties of the syllogism can be explored completely, and rules for them laid down, any attempt to work out exhaustively the logic of relational forms of judgement must fail.

2. He implies that all inference is deductive. Undoubtedly Aristotle recognized inductive as well as deductive inference. He both employs induction and treats it explicitly for its own sake and under a name of its own (*epagōgē*). Yet in his formal logic (*An. Pr.* 2 ch. 23) he does try to show that induction itself can be reduced to, or expressed in, syllogistic form. We shall return to induction later (pp. 186ff. below).

3. He did not develop the logic of propositions. Modern logicians, from Frege through Russell and Whitehead, have adopted a system of logic in which the units, for which variables are made to stand, are whole propositions instead of terms. Aristotle worked with an *A*, *B* and *C* which stood for single terms like 'man' or 'horse'. Propositional logic has its own variables, such as *p* and *q*, each standing for a whole proposition, which may be of the subject-predicate kind that figures in the syllogism ('whales are mammals') or quite a different kind like 'it will rain tomorrow'. It can thus formulate a new set of rules of inference, of which one of the most basic is 'If *p* then *q*; but *p*; therefore *q*' - *p* and *q* standing for propositions. Łukasiewicz wrote: 'No one can fully understand Aristotle's proofs who does not know that there exists besides the Aristotelian system another system of logic more fundamental than the theory of the syllogism. It is the logic of propositions.' Again, after mentioning the 'everlasting merit' of Aristotle's

¹ A. presumably had something like this in mind when he included *πρὸς τὴν* among the categories (1b29-2a1).

Inference: the syllogism

syllogistic, he adds in the same paragraph, 'The logic of the Stoics, the inventors of the ancient form of the propositional calculus, was much more important than all the syllogisms of Aristotle.' The best that can be said for Aristotle, it seems, is that he made use of the laws of propositional logic intuitively, without realizing what he was doing, and therefore without developing it into a system.¹

For the history of Greek logic it is interesting that the propositional formula set out above was first used by the Stoics, who have been called the inventors of propositional logic.² Almost to the end of the nineteenth century, the claim of the Aristotelian syllogism, in its medieval modifications, to be the sole foundation of logic remained unchallenged, and the Stoic innovations were dismissed by authorities of the stature of Prantl, Maier and Zeller as trivial and uninteresting. Now their system has come into its own as a masterpiece equal to, if not surpassing, the logic of Aristotle.

The *syllogismos* of Aristotle, then, is what is now³ called the categorical syllogism (*kategoria*=predicate) and defined thus (Stebbing, p. 81):

A categorical syllogism is a form of reasoning consisting of three and only three terms, which are so related that the first two propositions jointly imply the third.

People are constantly using syllogisms in everyday conversation without realizing it, usually in the abbreviated form known as enthymeme. Two examples from Stebbing (p. 83):

'You can't expect Baldwin to keep all his promises, for after all he is in the difficult position of Prime Minister.' (Maj. prem. omitted: 'No Prime Minister can be expected to keep all his promises.')

'No spoilt children are attractive, for no selfish child is.' (Min. prem. omitted.)

¹ Łukasiewicz, 47-51, 131. Patzig is more favourably inclined. See his pp. 134, 180, and n. 7 on p. 184. For more about this see pp. 168f. below.

² A reader wanting full information on the Stoic logic of propositions must be referred to Mates's *Stoic Logic*, but a brief, clear statement will be found in Sandbach, *The Stoics*, 97-9. For the contribution of the Megarjans see Sandbach p. 99 and Patzig's talk of 'Megaro-stoic discoveries' and reference to Bochenski on p. 137.

³ The phrase κατηγορηκὸς συλλογισμὸς occurs in A., but means one with a positive conclusion (*An. Post.* 79a26).

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A letter to *The Times* in 1971 concluded: 'One last point. The car is inanimate. It is only people who make it dangerous.' The last sentence is doubtless true, but the suppressed major premise – 'No inanimate thing is dangerous' – casts some doubt on the argument as such.

If the conclusion is omitted, we have innuendo, as in the undeserved epigram: 'The Germans at Greek are sadly to seek... all except Hermann – and Hermann's a German.'¹

I do not propose to examine the syllogism once again² in all its varieties, but we may take a look at a first-figure syllogism to see what Aristotle meant by one that is 'perfect' or 'complete' (τέλειος).

An. Pr. 25b 32 (trans. Ross): When three terms are so related to one another that the last is included in the middle as in a whole, and the middle is included or is not included in the first as in a whole, there is necessarily a perfect syllogism connecting the extremes... Thus if *A* is predicated of all *B* and *B* of all *C*, *A* is necessarily predicated of all *C*... (26b 3). This I call the first figure.

We are all familiar with something called the traditional syllogism, which was the basic of logic in the Middle Ages and beyond. The stock example is

All men are mortal;
Socrates is a man;
therefore Socrates is mortal.

This was supposed to represent the Aristotelian syllogism, but differs from it in more than one way. Formally it is an inference, consisting of three separate propositions, the third being a conclusion drawn from the first two. As Aristotle defines it, the syllogism is a single compound proposition of the form 'If... then', and he regularly states it in this way, rather than in the form of two separate propositions and a conclusion introduced by 'therefore'.³ So stated, it is not an inference but

¹ Modelled on *Anth. Pal.* xi. 236 (x. 39 in Mackail's selection).

² Even for J. S. Mill in 1843 the analysis of the syllogism had been 'so accurately and fully performed in the common manuals of logic' that he felt it enough simply to recapitulate its leading results. His recapitulation, however, is pretty comprehensive (*System of Logic* bk 11, ch. 2). For Aristotelian syllogisms see the table in Ross's *Analytics*, after p. 285.

³ Not always. Patzig (p. 4) mentions eight examples from the *Analytics* of syllogisms expressed in the traditional form with *ἐποὶ*. With *A*, there are exceptions to every rule. For syllogisms with singular minor premise and conclusion see *An. Pr.* 70a 24–28, *Met.* 1086 b 34–37.

Inference: the syllogism

an implication, and, as a single proposition, must be true or false, whether expressed with concrete terms or variables.¹ However, since as Aristotle presents it the syllogism simply states a formal requirement ('if *A* is predicated of (or belongs to) all *B*, and *B* is predicated of all *C*, *A* must be predicated of all *C*'), it is difficult to think of it as conveying truth or falsehood. Aristotle's word is not 'true' but 'necessary', and his usual way of saying that an argument is invalid is 'there will be no syllogism' or 'one cannot syllogize' (i.e. drawn an inference).²

A second difference was surely more important to Aristotle himself. In the example of the traditional syllogism the minor premise is a *singular* proposition, having for its subject a proper name which can only refer to a single individual; and we have seen already (pp. 143f. above) why for Aristotle the units in a logical system must be species and not individuals. He held that 'as a rule it is with these that arguments and scientific enquiries are concerned' (*An. Pr.* 43a42-43).

To become an Aristotelian first-figure syllogism, then, the traditional syllogism must be modified in these two ways, and will read (if retained in concrete rather than formulaic terms): 'If all animals are mortal, and all men are animals, then all men are mortal.' There remains the minor³ difference that instead of saying 'If all animals are mortal' and so on, Aristotle says 'If mortal is predicated of (or "if being mortal belongs to (ὕπάρχει)") all animals'. The position of the

¹ Łukasiewicz regarded this difference as fundamental, but others have wished to modify his view. See Austin, *Mind* 1952, 397f., and Prior, *Formal Logic*, 116 (quoted by L. E. Rose, *A's Syl.*, 25; Rose in his turn has been criticized by Charlton, *CR* 1969, 284, for his disagreement with Łukasiewicz). Cf. also Kneale, *D. of L.*, 8of. I. Thomas, in a review in *Phil. of Sci.* 1968, 197, says of the writer: 'He adopts without criticism Łukasiewicz's position that *A*. states his syllogisms as implications rather than as rules of inference, without regard to the rather damaging fire to which it has been subjected from various quarters.' As an advantage of setting out a whole argument in hypothetical form, Flew, in his highly readable little book *Thinking about Thinking* (p. 11), notes that it 'makes it clear why, in order to know whether the exemplary argument... is valid, we do not need to know whether any of its constituent propositions is true'.

² οὐκ ἔστιν συλλογισμὸς οὐδ' ἔστι συλλογισσάσθαι. Cf. *An. Pr.* 33b7: 'One cannot infer (συλλογισσάσθαι) a falsehood from true premises, but may infer a true conclusion from false premises.' At 26a4-5 *A.* says why nothing can be inferred from premises related in a certain way: 'There will be no syllogism between the extreme terms because nothing necessary follows from their being as they are.'

³ I had thought it trivial, because as Patzig says (p. 49), 'the logical relation between *A* and *B* of course remains the same', but am impressed by the importance which he attaches to it on pp. 8-12. Russell, in *My Philosophical Development*, attributes to 'Aristotle and the accepted doctrine of the syllogism' a failure to separate propositions of the form 'Socrates is mortal' from those of the form 'All Greeks are mortal'. 'The accepted doctrine' perhaps, but need we accuse *A.* of the fault?

terms, compared with the traditional syllogism, is inverted, which makes it natural for him to choose *B* for the middle term, as one would expect from its position in the alphabet. Modern logicians use the significant letters *S*, *P* (for Subject and Predicate of the conclusion) and *M* (for Middle term).

The 'perfect' syllogism, then, consists of two premises (προτάσεις) and a conclusion (συμπέρασμα), containing between them only three terms (ὅροι).¹ Of these the middle (ὁρος μέσος) is the term common to the two premises, which does not appear in the conclusion; the extreme terms (ἄκρα) are identified as major or greater (μεῖζων), which is the predicate of the conclusion, and minor (ἐλάττω), which is its subject. So we have what was later famous as the *dictum de omni et nullo*: If all (or no) *M* is *P*, and *S* is *M*, all (or no) *S* must be *P*. In this figure the major premise must be universal, and may be either affirmative or negative, and the minor premise must be affirmative. The conclusion will be universal and either affirmative or negative. Aristotle points out that the middle term gives the reason why *S* is or is not *P* (*An. Post.* 90a6-7). To illustrate with two sets of concrete terms: (1) If all metals are fusible, and lead is a metal, lead must be fusible; and (2) If no gods are mortal, and all Olympians are gods, then no Olympians are mortal.

This figure alone yields what Aristotle calls a perfect syllogism. His conditions for perfection are two: like every syllogism it must be valid for every case, and secondly its validity must be self-evident, that is, seen to follow directly from the premises with no need to insert another proposition before the conclusion can be seen to be necessary. To this form he believed that all inference can be reduced. So far we have seen one or two objections which attack it only on the score of inadequacy, as being too narrow. One, that it ignores induction, may

¹ ὅρος is literally a boundary or landmark, Latin *terminus* (whence 'term'). (Its use instead of ὁρισμός, a definition, is quite different.) πρότασις is commonly connected with πρὸςτιν in its sense of 'offer' for debate, but in view of the associations of ὅρος A. may also have had in mind the more literal sense of 'stretching', as of a line joining two points. This would not be inconsistent with the description of πρὸςτιν at *Top.* 164 b4 as 'making several into one'. Neither ὅρος in the sense of 'term' nor πρότασις is found before A. (Ross, *Analytics*, 288, 290) and A.'s own definition of πρότασις is simply 'a form of words' which affirms or denies one thing of another' (*An. Pr.* 24a16). In dialectic, however, it could be a question in the form of a proposition put interrogatively (Is it true that...?) (*Top.* 101 b28-36). See also Barnes, *Articles on A.* 1, 81 n. 74.

Inference: the syllogism

be somewhat curiously rebutted by pointing out that in this matter Aristotle's practice differed from his principles. Another should be mentioned, which throws doubt on the usefulness of the syllogism in its own sphere. It first occurs in Sextus Empiricus (*Pyrrh. Hyp.* 195-203) and has been repeated in later times.

The criticism (discussed by Ross, *Analytics*, 38-40) is that the syllogism involves a *petitio principii*. Aristotle claims that the conclusion is 'something different' from the premises, but in fact the premises cannot even be stated without assuming the conclusion to be true. As R. W. Newell in his book *The Concept of Philosophy* (p. 2) describes this doctrine (which he himself subsequently attacks), to reason deductively 'is to repeat, laboriously, what one already knows'. I argue 'All *M* is *P*, *S* is *M*, therefore *S* is *P*', but I had no right to say that all *M* is *P* unless I already knew *S*, which is an *M*, to be *P*. If I already knew lead to be a metal, and did not yet know that lead melts, I had no right to say that all metals melt. We cannot, said J. S. Mill, know by direct observation that the Duke of Wellington is mortal, since he is not yet dead; so we say that he is mortal because all men are. But 'a general truth is but an aggregate of particular truths'. There is no contradiction in supposing that so many millions have died up to now and that the Duke of Wellington may nevertheless live for ever. Contradiction only enters if we have first made a general assertion including the Duke of Wellington ('All men are mortal') and then refused to stand to it in the individual case.¹

Aristotle would reply that the criticism assumes the necessity of examining every single instance of a class before asserting that a certain predicate applies to the whole class. This he did not believe to be true. In mathematics it is certainly not true. Examination of only one triangle will reveal certain properties which follow necessarily from its nature as a triangle and can be assumed at once to belong to all

¹ Mill, *System of Logic* bk II, ch. 3, 'Of the functions, and logical value, of the syllogism'. Mill did not on these grounds condemn syllogistic reasoning outright. In fact he enters a strong protest 'against the doctrine that the syllogistic art is useless for the purposes of reasoning. The reasoning lies in the act of generalisation', for 'the general principle presents a larger object to the imagination than any of the singular propositions which it contains'. This, one might think, lies, logically speaking, uneasily with his earlier assertion that generalization is no more than an aggregate of particular truths. (On Mill's argument cf. Newell, *Concept*, 73-5, together with what he says on pp. 18-22.)

triangles alike. As for the natural world, we may so far anticipate the discussion of induction as to say that he believed the same to be generally true: there came a point in the examination of particulars at which one could stop, and know by a kind of intuition that there was a law which applied to them all, and would therefore apply to any member of the class which one might meet in the future. This solution was connected with his doctrine of substantial form, and was not open to Mill and his empirical contemporaries owing to their different conception of a universal as nothing more than the sum of its particulars. It was, said Mill, suited to an abandoned scheme of metaphysics. To Aristotle, still half a Platonist, universals, identified with specific form, possessed a certain substantiality. They were, as Mill rightly said, 'regarded as a peculiar kind of substances ["secondary substances"]', having an objective existence, though *not*, as he continues, 'distinct from the objects classed under them', save conceptually.

The criticism was also directed at the minor premise: one had no right to assert '*S* is *M*' unless one already knew *S* to be *P*, because all *M* is *P*; you cannot say lead is a metal unless you already know it to be fusible, because all metals are fusible. To answer this Aristotle could point to his distinction between essence and proprium, which we now know. Necessary attributes were of two kinds: those included in the definition because they are parts of the essence, and those which, though necessary and attributes themselves, have no place in the definition. To repeat our earlier example (p. 148), one would know that a given figure was a circle if one knew it to be a plane figure bounded by a line which is everywhere equidistant from the same point. It could not then be anything else, but the definition does not tell that if we draw a diameter the angle in that particular semi-circle will be a right angle.¹

These criticisms may raise the suspicion that syllogistic reasoning can add little to our knowledge. 'The point is that the *informative content* of the conclusion can never exceed that of the premises.'² In

¹ The point has been made clear by Ross (*Analytics*, 39): 'Among the attributes necessarily involved in being *B* he distinguishes a certain set of fundamental attributes which is necessary and sufficient to distinguish *B* from anything else; and he regards its other necessary attributes as flowing from and demonstrable from these. To know *C* is *B* it is enough to know that it has the essential nature of *B* – the genus and the differentiae; it is not necessary to know that it has the properties of *B*.'

² Popper, *Self and Brain*, 80 (his italics).

Inference: the syllogism

other words, knowledge of the conclusion is implicit in knowledge of the premises. But what, one may ask, does 'implicit knowledge' mean? Can we be said to *know* anything unless it is consciously and *explicitly* before our minds? Is this not what inference is: the correct use of data in themselves sufficient to suggest a conclusion in order to make us consciously aware of it? Aristotle himself was aware of this no less than modern thinkers: 'When one grasps the two premises, one has grasped and put together the conclusion' (*De motu an.* 701a10), and what happens is best expressed in his own terms: it is the actualization of knowledge which was potential (*An. Post.* 86a22-26). This actualization lays bare our thought-processes and reveals their faults, which is his justification for giving so much attention to the formal side of logic. A careless observer, seeing that lead melts, might hastily conclude that it was a metal; but of course it is equally true of wax. The rules of the syllogism would have saved him from arguing 'All *P* is *M*, *S* is *M*, therefore *S* is *P*'. It is one of the invalid moods of the second figure. Paramount is the need to start off with the right premises, the *archai* or starting-points of the syllogism.² The first figure is preferred because it is the most scientific (*epistemonik*, knowledge-giving, *An. Post.* 79a17), and therefore the one used in *apodeixis*.

Without giving disproportionate attention to logic, we may look at the definition of the second figure in order to see what Aristotle meant by an imperfect syllogism.³

Whenever the same thing belongs to all of one subject, and to none of another, or to all of each subject or to none of either, I call such a figure the

² Ch. 2 of Ewing's *Fundamental Questions* is useful reading. After an entertaining story to illustrate his point (p. 29), he concludes: 'The importance of syllogisms has often been exaggerated, but they are as important as any kind of inference, and we cannot deny that in many cases a syllogism has given people information of which they were not in any ordinary sense aware before they used the syllogism and which they did not acquire by observation.' Cf. also 31f. The pragmatist C. S. Peirce, 'While assenting to the view that the conclusion of every deductive inference is "already contained" in the premises, [he] insists that there is nevertheless an observational, and even in an extended sense an experimental, element in all deductive procedures' (Gallie, *Peirce and Pragmatism*, 93).

³ See *An. Pr.* 1.30. Note especially 46a10, 'We have now treated generally of the *archai* of syllogisms, their characteristics and how to hunt for them', together with 1.28, 'how to choose one's premises'. The modern logician's divorce of his subject from epistemology is not Aristotelian.

⁴ *An. Pr.* 26 b 34 in the Oxford trans. by A. J. Jenkinson. The expression shows the equivalence of 'belong to' (*ἐμπεριέχειν*) and 'be predicated of' (*κατηγορεῖσθαι*). The Greek for 'valid' is *δυνατός* (having force).

Logic, the tool of philosophy

second; by middle term in it I mean that which is predicated of both subjects, by extremes the terms of which this is said, by major extreme that which lies near the middle, by minor that which is further away from the middle. The middle term stands outside the extremes, and is first in position. A syllogism cannot be perfect anyhow in this figure, but it may be valid whether the terms are related universally or not.

Thus we have (in the traditional order of terms)

1st fig.	2nd fig.
M-P	P-M
S-M	S-M
<hr/> S-P	<hr/> S-P

Concretely, (1) If all metals are fusible and lead is a metal, lead is fusible.

(2) If all living things are self-moving, and no stone is self-moving, no stone is living.

The difference between the figures is determined by the status of the middle term: in fig. 1 it is subject in the major and predicate in the minor premise (i.e. between the two in extension, *An. Pr.* 26 b 35), in fig. 2 it is predicate in both, and in fig. 3 it is subject in both.¹ Aristotle's term 'figure' (σχήμα), then, refers to the relative position (and hence extension, cf. 26a21) of middle and extreme terms in a syllogism. 'Mood'² is usually employed to denote differences of quantity and quality in its constituent propositions, universal or particular, negative or positive. Thus second-figure syllogisms are valid or not according to their mood. A universal affirmative major and universal negative minor yield a universal negative conclusion, as in example (2) above. From a universal negative major and particular positive minor a

¹ Traditional logic includes a fourth figure, not recognized as a separate figure by A. At 41 b 1-3 he states emphatically that his three figures cover all demonstration and every syllogism. For this one may refer to Łukasiewicz, *A's Syll.*, 23-8, Ross, *Analytic*, 34f, Patzig, *Syllogism*, 109-27. Cf. also Cohen and Nagel, *Introd. to Logic*, 821 'If the distinction between figures is made on the basis of the position of the middle term, there can be no dispute that there are four distinct figures. But Aristotle did not distinguish the figures in this way. His principle of distinction was the width or extent of the middle term as compared with the other two. On this basis there are just three figures: the middle may be wider than one and narrower than the other, wider than either and narrower than either.'

² Not a technical term in A. On τρόπος and τρόπος see Patzig, *Syllogism*, 101. 'Modus' was a term of the Latin commentators introduced by Boethius.

Inference: the syllogism

particular conclusion may follow. (No sane man ignores traffic lights: some motorists ignore traffic lights: some motorists are not sane.) If both premises are universal and affirmative, no valid conclusion follows as it did in fig. 1. In certain actual cases the conclusion may happen to be *true*, but formally 'There is no syllogism'. Contrast 'All men are mortal: all philosophers are mortal: all philosophers are men' with 'All men are mortal: all dogs are mortal: all dogs are men'. This figure, it will be seen, admits of only negative conclusions.

We see what Aristotle means by saying that syllogisms in this figure *may* be valid, according to their mood. By saying that they cannot be perfect, he means that he does not consider this figure (and the same applies of course to the third) to be an independent mode of reasoning – independent, that is, of the first – because only in a first-figure syllogism was the conclusion immediately evident from the original premises alone. Syllogisms of the other figures, he believed, had to be converted¹ into first-figure form to make the inference clear. This seems unnecessary, and his refusal to recognize the independence of the other figures is not generally accepted,² though it is true that any syllogisms in the other figures *can* be converted into the first figure, which can therefore be said to be more basic and the only necessary one. Thus in concrete terms:

- fig. 2 No insect has eight legs.
 All spiders have eight legs.
 No spider is an insect.

Converting the major premise we get:

- fig. 1 No eight-legged creature is an insect.
 All spiders are eight-legged.
 No spider is an insect.

In fig. 2, 'insect' is subject in its premise and predicate in the conclusion. In fig. 1 it is predicate in both.

¹ Traditional and modern logicians use 'reduction' for this process, corresponding to A.'s ἀναγωγή. (For this and other expressions for the process in A., see Patzig, *Syllogism*, 184 nn. 8 and 9.)

² Ross, however (*Analytics*, 33f.), has attempted a justification based on the fact that the study of syllogisms was for A. a preliminary to the study of scientific method.

Logic, the tool of philosophy

Not all second-figure syllogisms can be converted so simply; e.g. if the argument is expressed thus:

All insects have six legs.
No spider has six legs.
Spiders are not insects.

we cannot get the first-figure syllogism simply by converting the first premise, for it is not convertible; it only tells us that 'some six-legged animals are insects'. The procedure in this case therefore is to convert the minor premise and make it the major of our first-figure syllogism, thus:

No six-legged animal is a spider.
Insects have six legs.
No insect is a spider.

The conclusion is convertible, and, by conversion, gives the original conclusion.

It has been pointed out¹ that in his proofs of imperfect syllogisms Aristotle uses intuitively the laws of propositional logic without recognizing it as an independent logical system in its own right. Just occasionally he even employs variables to stand for whole propositions instead of terms.² At 57 b1 he writes:

When two things are so related to one another that if the one is, the other necessarily is, then if the latter is not, the former will not be either.

In more modern terms:

If (if p then q), then if not q then not p .

Explaining this by an example he goes on:

Whenever if A is white, then B should necessarily be large, and if B is large, then C should not be white, then it is necessary if A is white that C should not be white.

In simpler, propositional terminology (without using full modern symbolism):

¹ Łukasiewicz, *A.'s Syll.*, 49. See also pp. 159f. above.

² See *An. Pr.* 53b12, with Patzig's comments on pp. 134 and 184 n. 8. The passage is exceptional as W. Kneale noted (*JHS* 1957 (1), 64): 'In propositional logic he did not ordinarily use variables but relied on examples.'

Inference: the syllogism

If (if p then q) and (if q then r), then (if p then r).

If Aristotle had habituated himself to using variables to stand for whole propositions, he could have based a new logical system on the kind of arguments that he illustrates here. But he did not, its beginnings among the Stoics were ignored, and logic remained tied to the traditional, 'Aristotelian' syllogism not only through the Middle Ages and Renaissance but down to the conscious creation of propositional logic in the second half of the nineteenth century.¹

¹ I shall not in this general work go into A.'s modal syllogisms, i.e. syllogisms in which at least one of the premises contains the words 'necessary', 'possible' or their equivalents. There is a section on it in Kneale (ch. 11, 7), which opens with a definition, and in which we read: 'the Aristotelian theory of modal syllogisms is generally recognized to be confused and unsatisfactory' (p. 86) and in his theory of syllogisms with problematic premises he 'seems to have been almost wholly mistaken' (87). Ross (*Aristotle*, 36) speaks of errors in its formal logic, and for Patzig (86) it is 'still a realm of darkness'. Among recent contributions may be mentioned Hintikka's *Time and Necessity: Studies in A.'s Theory of Modality* (1973, but containing ten papers previously published between 1957 and 1970). For discussions of the famous 'sea-battle argument' on the logic of future events, see p. 149 n. 1 above.

THE ROAD TO KNOWLEDGE

(1) 'APODEIXIS' (DEMONSTRATION)

Preliminary note on the function of apodeixis

'The *Posterior Analytics* is a study of scientific method', wrote Ross, and so most of us thought until Jonathan Barnes proposed that

the theory of demonstrative science was never meant to guide or formalise scientific research; it is concerned exclusively with the teaching of facts already won; it does not describe how scientists do, or ought to, *acquire* knowledge; it offers a formal model of how teachers should *present and impart* knowledge.¹

This is to solve what he sees as 'a classical problem in Aristotelian exegesis', namely how to account for the fact that in his own philosophical and scientific work Aristotle does not put the method into practice.² The thesis is ably and methodically argued. Having rejected solutions hitherto proposed, and shown that *apodeixis* is sometimes introduced as pedagogic in intention, he passes to *equating* it with pedagogic arguments (p. 82), and almost traps the reader into suspecting him of arguing that because some A is B, all B is A (some instruction is imparted through *apodeixis*, therefore all *apodeixis* is pedagogic) before, with three quarters of the paper written, he turns to his positive evidence that *apodeixis* was not *also* a method of research.

He may be right, but I am not convinced. A primary method of teaching is dialectic, as the *Topics* makes clear. Is it only prejudice that makes it seem impossible that a man who had still so much of the Socratic in him as is there revealed should devise also, exclusively for educational purposes, a method so unlikely to develop the right teacher-pupil relationship? If, says Barnes, we are teaching a pupil by demonstrative means, 'we tell him a pair of

¹ 'A's Theory of Demonstration', in *Articles on A.* 1, 77. (Revised version of an article which first appeared in *Phron.* 1969.) His view was to some extent anticipated by Grote, *Arist.* 11, 302 and 304, and briefly by von Fritz, *Εργασια* 28. For a recent alternative explanation see Mittelstrass in *Archive for History of Exact Sciences* 1965, 433f., and cf. Lesher, *Phron.* 1973, 37 n. 31. For a very full treatment consult M. Mignucci, *L'argomentazione dimostrativa in A.*, a commentary on the *Posterior Analytics*. Vol. 1, covering bk 1, appeared in 1975.

² The fact is noted by Düring (*Arist.*, 22), but does not seem to cause him great anxiety. Greene in her *Portrait of A.* (pp. 181f.) is even content to speak of 'Aristotle's method as set forth in the *Posterior Analytics* and its application in the physical treatises'.

'Apodeixis'

propositions which are to serve as premises; we then draw the conclusion.'¹ 'The question is,' he continues, 'Has the pupil acquired any new knowledge by our taking the last step?' More important, one might think, is the question whether a pupil educated by such a method will ever learn to think for himself. On p. 81 he actually mentions Socrates's conversation with the slave in Plato's *Meno* as a precursor of this sort of thing, whereas the two methods could hardly exhibit a greater contrast. If 'Aristotle was not telling the scientist how to conduct his research; he was giving the pedagogue advice on the most efficient and economic method of bettering his charges', I doubt if it would have been the best advice. Economy and efficiency recall the slogans of some modern educationists rather than of Aristotle. Where a passage sounds pedagogical, what is taught may be a method itself, not its results; as for instance *An. Post.* 97b7ff. on research (ἡρεσις). The teacher is not giving a history lesson about Alcibiades, Lysander and Socrates; he is offering a paradigm of how to conduct an enquiry.

At *An. Post.* 71b16-19 *apodeixis* is introduced in general terms as a method of acquiring knowledge; and if, as is said at *Met.* 1005b5-8, 'It is the part of the philosopher, surveyor of the nature of all that is, to investigate also syllogistic principles', these must be the principles of *apodeixis*: otherwise they would have no relevance to the study of reality. Again, when *apodeixis* is called a scientific or 'epistemonic syllogism, i.e. a syllogism to grasp which is to know' (*An. Post.* 71b17-19, and similarly with the epistemonic question at 77b36), it is natural to take this as referring to the actual acquisition of knowledge, not simply the imparting of knowledge already won. He has just said that *apodeixis* is at any rate one way of knowing (τοῦ ἐπιστάσθαι τρόπος), and it is even a matter for future consideration whether there is any other. The same is true of other passages, e.g. the mention at 73a22-24 of 'what is known by apodeictic science, meaning by "apodeictic" the knowledge that we possess by having demonstration (*apodeixis*) of it'; and 81a40 'we learn either by induction or by demonstration'.

On p. 83 Barnes points out that according to Aristotle searches must precede demonstration; and he adds: 'This strongly implies that demonstrations cannot themselves be instruments of research.' Searches must certainly precede demonstrations. How else would the philosopher-scientist get his premises? But searching and its result (the amassing of facts) do not amount to knowledge, for as we shall soon see, genuine scientific knowledge (*epistēmē*) implies in Aristotle's eyes knowledge not only of the fact but also of its cause. The syllogistic procedure comes after the fact-finding stage, to turn

¹ P. 84. Cf. the mention on p. 79 of 'a teacher, and a pupil to whom he imparts knowledge in a formal manner'. B. occasionally writes as if *παύειν* were used solely as the passive of *διδάσκειν*, which is not so.

The road to knowledge

it from experience into knowledge, and how much emphasis is laid on one or the other depends on the nature of a science and the stage it has reached. Perhaps Aristotle was not quite 'conceited to the point of fatuity', in spite of the passages referred to by Barnes on p. 85 (n. 88),¹ but admitted that in some sciences there was still quite a lot of fact-collecting to be done before the universal premises could be selected and the downward process begin. What may be readily granted, however, is that in Aristotle's mind the original acquisition of knowledge and its dissemination by teaching were more closely associated than they usually are with us. The criterion by which to distinguish the knower from the ignorant is his capacity to teach (*Met.* 981 b7), and 'all knowledge appears capable of being taught' (*EN* 1139 b25). Cf. also *Met.* 982 a28.

'Syllogism must be discussed before *apodeixis* because it is the more general: *apodeixis* is a species of syllogism, but not every syllogism is *apodeixis*' (*An. Pr.* 25 b28). We know now that Aristotle distinguished the formal correctness of an inference from its truth or falsehood when applied to concrete facts, calling the formal structure syllogism, and its epistemological or scientific application *apodeixis*, demonstration. The transition from one to the other is most clearly made in the *Posterior Analytics* bk 1 ch. 2. It begins:

We think we have knowledge of anything in the strict sense – not just an unscientific² and haphazard knowledge – when we believe ourselves to know the cause of the fact,³ that it is the cause of that fact, and that it could not be otherwise than it is . . . The object of knowledge in the strict sense cannot be otherwise than it is.

Here and occasionally elsewhere⁴ Aristotle talks as if science deals only with the necessary, subject to *invariable* laws, so that the premises of the apodeictic syllogism must be not only true but necessarily so. Here for the sake of emphasis he omits that other favourite conception

¹ These must be seen in context, and in the light of A.'s belief that all knowledge has been perfected many times over, and lost again in recurrent natural disasters. Cf. *Met.* 1074 b10–13, *Pol.* 1329 b25f., *Cacl.* 270 b19f., *De phil.* fr. 8 and *Protr.* fr. 8 (Ross). See also p. 85 above.

² On τὸν σοφιστικὸν τρόπον I have followed Grote, *Arist.* 1, 313 n. 6.

³ Often, and rightly, brought into connexion with this is Plato *Meno* 98a: true opinions are converted into knowledge by 'working out the reason' (αἰτίας λογισμῷ).

⁴ See 73 a21, *EN* 1139 b20. But note (and I have not seen it noted) that ἀναγκαῖον need not always mean 'necessary, absolutely and without exception', for A. uses the comparative form ἀναγκασιώτερον, which can be replaced by ἀκριβοσιώτερον. Cf. *Met.* 1025 b13 with 1064 a6. On the meanings of ἀκριβής see Grani, *Esthet.* 1, 452, a ref. which I owe to Leshner in *Phron.* 1973, 63.

'Apodeixis'

of his, what happens 'usually', 'as a rule' or 'for the most part' (ὡς ἐπὶ τὸ πολὺ). This is commonly conjoined with 'always' or 'necessarily', and the two together are contrasted with what happens by chance, and so *neither* always *nor* for the most part. In the changing world of nature there may be exceptions to every rule. His full view is expressed later (87 b 19-22): 'What happens by chance cannot be known by demonstration, for it is neither necessary nor usual, and demonstration deals with what is *either* one *or* the other.'¹ Nevertheless it is only in view of their constancy, absolute or approximate, that things or events can be properly and scientifically known.

Untroubled by any Humian injunction to 'restrain the intemperate desire of searching into causes', Aristotle asserts that one does not know something until one knows its cause, and a later description of *apodeixis* calls it 'a syllogism demonstrating the cause, or why the fact is so' (85 b 23). This is why sensation cannot by itself impart knowledge, in spite of the direct acquaintance of individuals which it affords: 'the senses do not tell the reason, e.g. why fire is hot, but only that it is hot', whereas 'what it is and why it is are the same'. So too engineers and architects are wiser than their workmen, because they know the reason for what is being done, whereas the experienced workman knows only *that* it works.² Knowledge, being of the necessary, is also of the universal (EN 1140 b 31).

To continue with *An. Post.* bk 1 ch. 2, *apodeixis* is certainly one way of acquiring knowledge. The question of other possible ways is postponed, but it soon becomes plain that they must exist if science is to be possible, since the primary premises of all must be *anapodeikta*, not themselves reached by demonstration. 'There simply cannot be *apodeixis* of everything: the process would go on to infinity, so that there

¹ Fuller treatment at *Met.* 1026 b 27-27 a 28. Thus at 1027 a 20: 'Clearly there is no knowledge of the accidental, for all knowledge is of what occurs *either* invariably *or* usually' (repeated at 1064 a 4-5). What is 'for the most part' can be brought under a law, e.g. that a certain remedy will benefit a fever-patient, but the accidental never. Chance for its own sake is the subject of *Phys.* 2, chh. 4-6 (pp. 233ff. below).

² *An. Post.* 85 b 23 (cf. *Met.* 983 a 25) and 90 a 15; *Met.* 981 b 10-13, 981 a 25. In her examples of 'What is ...?' questions, Elizabeth Anscombe includes 'What is dreaming?' (*Three Phils.*, 11). This is a good illustration of A.'s point here. She comments on the questioner that 'in a sense he knows what dreaming is, but wants some sort of account of it' (λόγον διδόναι to use the Platonic phrase). He is well acquainted with the phenomenon of dreaming, and could describe it accurately; but he wants it explained or accounted for. In effect he is asking 'Why do we dream?'

would still be no *apodeixis*.¹ *Apodeixis* is now defined as 'scientific syllogism', that is, 'one to grasp which is to know'.² An apodeictic syllogism, as opposed to a dialectical (or of course a merely formal) one, is a true *philosophema* (*Top.* 161a15). Here the opinions of the ordinary man count for nothing. 'Don't discuss geometry with a non-mathematician' (77b12): geometrical discussion (*logos*) must be based on geometrical principles and conclusions. To fulfil these conditions the premises of the apodeictic syllogism must not only be true and express the real cause, but also 'primary and immediate': a science must depend ultimately on premises which may be taken as self-evident, or we are landed with the infinite regress. Next they must be 'more knowable', a point to be explained later (pp. 198f.), and, as causes, prior to the conclusion.³ Apart from the basic axioms or *summa genera* of science or a science, the premises in a chain of reasoning, leading to the fact demonstrated in the conclusion, must be logically prior to the fact, i.e. established as true before being used to prove it. They must, he adds, be causes of the conclusion. The point that only knowledge of causes is real knowledge was made emphatically a few lines above, and he now continues: 'for so the premises will be really appropriate to (*olkēai*) what is being proved'. His present concern therefore is appropriateness or relevance, and those are doubtless right who take it to refer to the impossibility of proving theses in one science from premises appropriate to another, the 'transfer from another genus': 'you cannot prove geometrical truths by arithmetic', a question of continuous magnitudes through the science of number.⁴

¹ *Met.* 1006a7. Cf. *An. Post.* 71b26-29, 72b18-22, 84a30 ('If this is true, there must be starting-points (*ἀρχαί*) of demonstrations, and there cannot be *apodeixis* of everything'). A second view that A. reasonably rejected was that apodeictic knowledge could be attained by arguing in a circle, *κύκλῳ γίνεσθαι τὴν ἀπόδειξιν καὶ ἐξ ἀλλήλων* (72b15-18; but cf. H. W. Johnstone, p. 184 n. 5 below).

² Later in the book (79a17-32) he says that the most scientific syllogism will be in the first figure, 'for to infer the cause belongs either invariably or usually to this figure'.

³ Cf. *Top.* 159b8 and 141a28, *γνωρίζομεν δ' οὐκ ἐκ τῶν τυχόντων ἀλλ' ἐκ τῶν προτέρων καὶ γνωριωτέρων*. Prior and more knowable, he says at this point, have two senses. This will be explained on pp. 195f. below.

⁴ 75a38ff., b14-17. Cf. Ross, *Analytics*, 55. That this is the reference is confirmed by 75b39, 76a5-7: It is not enough for the premises to be true, immediate and undemonstrated: everything must be demonstrated from its own *ἀρχαί*. (Moreau suggests a different explanation in *A. et son école*, 53.)

‘Apodeixis’

The relation between apodeixis and definition. According to the *Topics* a definition is a form of words which states the essence of its subject, and it is made up of genus and differentiae, which alone explain the being of anything because they exhibit its form. At the same time ‘it is clear that there can be syllogism of a definition’, i.e. it can be reached by syllogistic reasoning.¹ The relations between definition and the apodeictic syllogism appear strange and complex. As a part of logic definition is treated in *An. Post.* 2, chapters 2–13, where in ch. 2 to seek a definition is to look for a ‘middle’, i.e. the middle term which expresses the cause (p. 162 above). This suggests the syllogism, but just as in the *Metaphysics* (997a31) ‘there does not seem to be *apodeixis* of substance (οὐσία, ‘essence’, Ross in O. Tr.)’, so here ch. 4 argues that there can be no syllogism or *apodeixis* of the essence (τοῦ τι ἐστίν, of what something is), and in ch. 8 the somewhat mysterious conclusion is reached (93b16) that

There is no syllogism or *apodeixis* of the essence, but nevertheless it is exhibited through syllogism and *apodeixis*,² if its cause is external to it. Our conclusion is that neither can the essence of anything be known without *apodeixis*, if its cause is external to it, nor can there be *apodeixis* of it.

Later, at 94a11, he says that ‘plainly there is a sort of (οἶον, ‘something like’) *apodeixis* of the essence, differing from it in arrangement’, and at 94a8 he mentions without qualification ‘the *apodeixis* of the essence’. 84a11 says that ‘*apodeixis* is of what belongs essentially to things’. A definition may be one of three things (94a11): either an undemonstrable statement of the essence,³ or a syllogistic inference from it, or thirdly the conclusion of an *apodeixis* of the essence. He has endeavoured to explain this in chapters 2 and 3, but a different approach, still based on his own text, may be clearer.

¹ *Top.* 153a15 and 23, 143b9. (Our phrase ‘specific difference’ goes back to A.’s εἰδησιαὶ διαφορά at 143b8.) Definition as statement of the essence also at *Met.* 1017b21, 3025, 312a12, 422a17.

² One can ‘show’ (δηλῶσαι) the essence by demonstration without demonstrating it (μὴ ἀποδεικνύοντας) 93b25–28. Especially puzzling is the statement in ch. 7 (92b38) that ‘one cannot know the essence either by definition or by *apodeixis*’. In this chapter definition seems to be reduced to its least important nominal (ὀνομαστικῆς) form. It must be remembered, however, that ch. 7 is explicitly aporetic (as indeed are earlier chapters), and ch. 8 makes a fresh start, promising to investigate which of the foregoing conclusions are sound and which not.

³ And as such the ἀρχή of an apodeictic syllogism. Some truths must be indemonstrable, to avoid an infinite regress (pp. 173f. above), and these include at least some definitions (*An. Post.* 90a4, *De an.* 402b25–26).

The road to knowledge

There are two main kinds of definition, nominal and real (93b29ff.). The first simply enables one to connect the fact with the name, e.g. 'Thunder is a noise in the clouds'. Real or complete definition, as we know, includes a statement of the cause, which Aristotle equates with the essence,¹ e.g. 'Thunder is the noise of fire being quenched in the clouds'.² By expressing the cause this is in effect the same as *apodeixis*, though in form it is not.³ Strictly speaking, *apodeixis* is the answer to the question 'Why does it thunder?', not 'What is thunder?'. Real definition is thus a kind of potted *apodeixis*, which packs in the middle term along with the major and minor in the same sentence. The implied syllogism may be set out thus:⁴

Quenching of fire necessarily produces noise.
In the clouds fire is being quenched.
Therefore in the clouds there is noise.

So, as Aristotle points out (94a7), the conclusion of the apodeictic syllogism of the essence gives by itself the [nominal] definition of thunder as 'noise in the clouds'. *Apodeixis* is here called 'continuous' because being in syllogistic form it constitutes a *progress* from premises to conclusion. It is like a line, whereas definition is the same thing gathered up into a point. The lesson of the early part of *An. Post.* (bk 1 ch. 2) is undoubtedly that all scientific truth is arrived at (not merely expressed) by a process of syllogistic reasoning from self-evident premises, even if not usually presented in that form. The unnatural cumbrousness of this becomes even more evident if we take another of Aristotle's examples, the lunar eclipse. From what is said about it in *An. Post.* bk 2 ch. 2, together with passages already noted, one must conclude that to define it properly, giving its cause, presupposes an argument like this, whether to prove it (*δεικνύναι*) or simply to explain it (*δηλοῦν*):

¹ 90a14, 'In all these instances it is plain that what a thing is (its essence, τὸ τι ἐστίν) and why it is are the same'; line 34, 'As I say, to know the essence is the same as knowing the cause.' Cf. *De an.* 413a13-20, where current definitions are dismissed as offering for the most part conclusions only.

² This theory about thunder was held in different forms by Empedocles and Anaxagoras, and is criticized by A. himself when writing on meteorology (*Meteor.* bk 2, 369b11).

³ It differs *ἕως* or *πρὸς* (94a2 and 12).

⁴ Based on Joachim, *Nic. Eth.*, 55.

'Apodeixis'

Any body whose light being derived from the sun is blocked by the interposition of the earth loses its light.

The moon is a body whose light, derived from the sun, is thus blocked.

Therefore the moon loses its light.

The middle term does describe the real cause, but we should scarcely want to explain eclipses of the moon as if they were instances of a more general law. In this first attempt to devise a scientific method, Aristotle could only conceive of basing it on the subject-predicate relationship, and what we see as the *events* whose relationship science investigates appear in the guise of *properties* of the subjects to which they happen, attributes flowing from their essence.¹ Instead of tracing a sequence of causally connected events he thinks rather in terms of taking a subject and laying bare all its essential attributes.

This investigation of essence and properties is entirely appropriate to mathematics, and it might be that Aristotle's training in the Academy had led him to extend it unconsciously to all science. As an illustration he uses more than once the equivalence of the angles of a triangle to two right angles, a timeless mathematical truth. More probably it has deeper roots. Not only the Pythagoreans, who earlier saw the cosmos in mathematical terms, but the Presocratic natural philosophers in general, sought something static, the nature (*physis*) and inherent properties of things, rather than any sequences of cause and effect or laws of motion. So too with Aristotle. 'Tout le monde sait', in the words of Suzanne Mansion, 'que le but propre de la science d'après Aristote est la connaissance des essences, des qualités des choses.' But any influence from the Presocratics was certainly unconscious, for consciously he condemned the earlier neglect of the problems of motion as a fundamental error. Cornford in his inaugural lecture² quoted a twentieth-century scientist, N. R. Campbell, as observing that such 'timeless laws of associated properties' are not only, in an imperfect form, the earliest laws of science, but still retain their

¹ Cf. *An. Post.* 90a11 and 13 τὸ τῶν κοῦ αὐτό . . . τὸ δὲ τὴ φύσιν ('a property, e.g. eclipse', Mure in Oxford trans.).

² *The Laws of Motion in Ancient Thought* (1931), 22-4. Perhaps this 'Schriftchen' does less than justice to early Greek physics. So at least Wilhelm Nestle thought (*Phil. Woch.* 1936, 754).

The road to knowledge

significance alongside the laws of motion and of cause and effect which have come into prominence since Galileo and Newton. Campbell added something even more relevant to Aristotle. Laws which assert that 'there is such a thing as steel, considered as a group or system of constantly associated properties... form the content of the classificatory sciences, such as the older zoology, botany, mineralogy', which grouped their material according to resemblances and differences but were not concerned to discover laws governing 'the conjunction of successive events', which Dugald Stewart saw as the proper object of physics. It was in precisely the classificatory sciences that Aristotle so far surpassed his contemporaries and produced results which are still respected today.¹

(2) THE 'ARCHAI'² OF KNOWLEDGE

Our assent to the conclusion being grounded upon the truth of the premises, we never could arrive at any knowledge by reasoning, unless something could be known antecedently to all reasoning.

J. S. Mill

It must be the case that we are capable of knowing at least one proposition to be true, *without* knowing any other proposition whatever from which it follows.

G. E. Moore

It is foolish not to recognize what one should seek to demonstrate and what not. There cannot be demonstration of everything alike: the process would go on to infinity, so that there would still be no demonstration.

Aristotle (*Met.* 1006a6)

¹ If I have failed to understand A. completely here (and on the relations between definition and demonstration I have certainly found him hard to follow), a reader may be helped by S. Mansion's *Le jugement de l'existence chez A.*, especially the second chapter of each of its two books; or by Moreau, *A. et son école*, 59-63. Barnes (*Articles on A.* 1, 82) says that according to A.'s arguments in *An. Post.* 2, 3-10, 'definitions, or statements of essence, cannot be demonstrated - they may, in a sense, be exhibited in an *apodeixis*, but they cannot occur as conclusions'. Exactly how the definitions can 'in a sense be exhibited' in the *apodeixis* is just what one would like to know, and his own conclusion from this, that 'essence is at best an accidental quarry of demonstration', does not altogether clear the matter up, nor does it take account of some other key passages, notably *Top.* 153a23 and *An. Post.* 84a11, 94a1-2.

² In this section at least it will be best to retain the Greek word. *Archē* means a beginning, starting-point, first principle or cause. In one place (*Met.* 1003b23-24) he says that ἀρχή and αἰτία are ἀὐτόματα, and at 1013a17 that all αἰτία are ἀρχαί. In a physical sense it was applied to the primary substance and permanent ground of the universe postulated by the early natural philosophers - water, air, *apeiron* and so on (vol. 1, 17f.). In applied logic the *archai* are the ultimate, undemonstrable premises of apodeictic syllogism.

The 'archai' of knowledge

There need not be, are not, and *could* not be, any ultimate ἀρχαί of definition, explanation and demonstration.

Renford Bambrough

The last chapter of the *Posterior Analytics* is one of the most important in all Aristotle's works. It is a confession of his epistemological faith, a statement of the source from which in the last resort all knowledge springs, 'a magnificent account', as Ross put it, 'of the unbroken development from sense to reason'.¹ So far we have seen him describe the process of acquiring knowledge as syllogistic, i.e. deductive, reasoning downwards from certain basic propositions which he calls the *archai* of the scientific syllogism. These must be regarded as axiomatic or self-evident, being themselves *anapodeikta*, not subject to demonstration by the scientific syllogism. Without such primary, indemonstrable truths we should have either an infinite regress or a vicious circle and the advancement of knowledge would be impossible. Hence not all knowledge is by demonstration. If knowledge of the primary assumptions² were demonstrable, they would not be known until they had been demonstrated. Therefore in the case of the *archai* of knowledge one must not ask the reason why; each must carry conviction on its own. These assumptions or axioms³ are admitted both

¹ There is a complementary account of this development at the opening of the *Metaphysics*, where emphasis is laid on the natural delight which we take in the exercise of the senses, especially sight.

The chapter in *An. Post.* has been subjected to a gruelling cross-examination by Hamlyn in *Phron.* 1976, 171ff., where A.'s account is described as 'crude', 'incoherent', 'not altogether perspicuous', 'not very plausible'. Some of his article I have failed to understand. He asks, for instance, on p. 179: 'Is it plausible to suppose that we differentiate men, say, from certain other objects, because we experience men more frequently?' And as opposed to what objects – trees, for example? Who is suggesting that our power of distinguishing one thing from another applies to men but not to trees? Again, 'Repetition itself seems an empty explanation' of the persistence of objects in the memory. Does it not rather refer us to an obviously relevant fact of experience. Hear a man's name once or twice, and you probably forget it. Meet it many times in different contexts (perhaps making his acquaintance, or reading of him in the news) and it will 'make a stand' in the mind.

A. M. Quinton, *The Nature of Things*, 121 describes A.'s first principles thus. They are 'logically intuitive basic statements which do not essentially require the support of other justified beliefs, and which are only inferable and testable in the light of their consequences'.

² In which at one time at least he included definitions. See p. 175 n. 3 above. For a modern opinion (Bambrough's) see p. 250 n. 2 below.

³ At *An. Post.* 72a 14–16 an axiom is said to be something which, though it cannot be demonstrated, must be grasped before anything can be learned. 'There are some such truths', adds A. a trifle artlessly.

for philosophy in general and as applicable to a special science.¹ In general they are not so much premises as principles on which reasoning must be carried out. Foremost is the law of non-contradiction, that 'the same thing cannot at one and the same time and in the same respect both be and not be', described as a necessary truth about which one cannot be mistaken. It is 'the most certain of the *archai*' and 'by its nature *archē* also of all the other *archai* and axioms'.² Others are the law of excluded middle (*An. Post.* 71a14, 88b1) and the principle that if equals are taken from equals, equals remain.³ As for the special sciences, 'in each separate kind I call *archai* the truths that cannot be demonstrated' (76a31). Here in *An. Post.* bk 1 he confines himself to mathematical examples such as the axioms of geometry and the definitions and existence of such things as unit, point, line, triangle, magnitude.⁴ Studies with a practical end, like ethics, also provide examples (*EE* 1227b22). Virtue itself lays down the end, not the means, for the end is not determined by syllogism or taking thought, but must be accepted as an *archē*. Similarly medicine assumes that its end is health, and considers only the means thereto. In the natural sciences the *archai* are reached by experience based on repeated observation.

46a17-25. For instance astronomical experience provides the *archai* of astronomical science: it was after the phenomena were sufficiently grasped that astronomical *apodeixeis* were discovered. It is the same with every other art and science. Given the facts in each, it is in our power to expound the demonstrations.

Aristotle's two main classes of undemonstrated *archai* resemble the

¹ *An. Post.* 76a37-b2, *Met.* 1005a23-27. Cf. Leszl, *Ontology*, 65f., and for what A. meant by a single science see *An. Post.* 87a38-b4.

² *Met.* 1005b5-34, 1011b13-14. On the necessity of the law of non-contradiction and its relation to earlier philosophies, especially those of Heraclitus and Protagoras, see Grote's discussion in *Arist.* II, 140-69.

³ 76a41. A. expressly includes this among the *κοινά*, while pointing out that a particular science (in this case mathematics) uses a *κοινόν* for its own purposes so far as it applies to its own subject-matter. But to investigate the *κοινά* themselves belongs to first philosophy (*Met.* K, ch. 4).

⁴ Ross commented that this was inevitable, because in A.'s time mathematics furnished the only developed science. Barnes says the same, but adds that this presented A. with a dilemma, because he was primarily interested in the natural sciences, which had not the compelling rigour of mathematics, but allowed for what occurs 'for the most part' as well as what was invariably true. (Ross, *Analytics*, 504 and 52; Barnes in *Articles on A.* 1, 74. Cf. p. 172 above.)

The 'archai' of knowledge

'hard' data which Russell distinguished from 'soft' in *Our Knowledge of the External World* (77f.): 'The hardest of hard data are of two sorts: the particular facts of science and the general truths of logic . . . Real doubt in these two cases would, I think, be pathological.' Ayer enunciated a similar unquestionable *archē* of his own when he condemned as nonsensical the assertion that the world of sense-experience is altogether unreal. Aristotle would agree, but not with the logical positivist's (as he was then) further claim that 'from empirical premises nothing whatsoever concerning the properties, or even the existence, of anything super-empirical can legitimately be inferred.' (See Ayer, *Language, Truth and Logic*, 2nd ed., pp. 39 and 33.)

The final chapter begins: 'It is now clear what syllogism and *apodeixis* are, and how they are produced, and likewise *apodeictic* knowledge, which is the same thing. How the *archai* become known, and by what faculty, will next be made clear, when we have first set out the problems.'

If the *archai* are not deducible from prior truths, how *do* we know them to be true? This question of 'the *archai* of the syllogism' is the concern of the philosopher, 'the surveyor of all being' (*Met.* 1005b5-8). In the *Ethics*, three alternative, but closely related services are mentioned: induction, sensation, and 'a certain habituation'. The gist of what follows in the *Analytics* is that the basis of all knowledge is sensation, described as 'a congenital power of distinguishing one thing from another'. This is common to all animals, but only some have the capacity to go beyond sensation. In these the mental process ascends first to memory, then (in mankind only) to the making of a generalization.² We now have experience, which consists in seeing the single identity (concept in our minds, corresponding to the *eidos* in the particulars) behind the multiplicity of particular examples, and is the foundation in their respective spheres of practical skill and theoretical knowledge. In Aristotle's general philosophical terms, all men have

¹ διαπορήσας πρῶτον, a reminder of his salutary advice at the beginning of *Met.* B. (p. 90 above).

² A.'s own word here is λόγος. Exactly as in Plato (*Phdr.* 249; vol. IV, 404 and 427), men proceed from many sensations to a unity embraced by thought. (But not for A. any question of knowledge recollected from a pre-natal state.) In the *Phil.* too Plato's attempt to bridge the gap between sense and reason bears a resemblance to A.'s, notably in the origin of *doxa* from sensation and memory at 38 b. See also Allan in Stenzel's *PMD*, xxxiv-vi. Leshner (*Phron.* 1973, 59 n. 37 *ad fin.*) may well be right in suggesting that ἢ at 100a6 may mean 'or rather', not 'i.e.'.

The road to knowledge

the potentiality of knowledge,¹ and this is how it is actualized; i.e. by the familiar process of abstracting the single *eidos* informing all the particulars. Without the conceptually separable form, *apodeixis*, and hence knowledge, would be impossible.² The upshot is that knowledge is not innate in us in a determinate form (Plato), nor is it derived from other, prior states of knowledge, but originates entirely from sensation. The process is illustrated by a vivid simile: it is as in a battle, when an army has been routed, if one man has the courage to turn and make a stand, his example fires another and then another, until their original order (*archē*) is restored.³ From our earliest years we are bombarded with a confused mass of sensations.⁴ A great many we forget at once: they slip away and flee from us. But there comes a time when one remains in our memory, then more and more. Gradually we are becoming experienced. Finally, being creatures possessed of reason, we become aware of the *archē*, which is nothing more or less than the 'one beside the many',⁵ a universal of which all the separately remembered particulars are examples, and are enabled to produce that definition which is one of the *archai* of the scientific or apodeictic syllogism (90b24).

¹ δυνάμιν 99b33; 'the mind is such as to be capable of (δύνασθαι) undergoing this process' (100a13). Perhaps this still remains all that can be said about the question. Chomsky has something similar in his Bertrand Russell lecture at Cambridge in 1971: 'Intrinsic principles of mental organization permit (cf. ἡ ψυχὴ ὑπάρχει τοιαύτη οὕσα οἷα δύνασθαι) the construction of rich systems of knowledge and belief on the basis of scattered evidence. Such principles... constitute an essential part of human nature.' (*Problems of Knowledge and Freedom*, 45.) This may be relevant to Hamlyn's complaint at the end of his article in *Phron.* 1976 (p. 183 n. 2 below) that A. did not ask 'what it is that must be the case about human beings and their psychical capacities' to make *ἐπαγωγή* possible and useful.

² Cf. 77a5-8: 'Apodeixis does not necessitate the existence of [Platonic] Forms, a One apart from (παρά) the many, but it is necessary to affirm the truth that there is a unity covering (or predicated of, κατά) many. Without this there will be no universal, and if no universal then no middle term and so no *apodeixis*.'

³ The play on this word, which in addition to 'beginning' means 'rule, authority or command' (*Met.* 1013a10-13), cannot well be reproduced in English. The army has recovered its original state, and what has been restored in discipline and control. In both these senses it belongs to the simile alone, but A. has ingeniously reminded us that *archai* are also his own theme.

⁴ εἰσθητά, that is, particular physical objects of which sensation makes us aware. A. has not here in mind any distinction between these and what are now called sense-data, though perfectly capable of distinguishing when he wished between τὸ λευκὸν as a colour and as a coloured thing.

⁵ ἐν παρά τὰ πολλά. Separable of course only in our minds (pp. 219f. below). Owen has pointed out (*Symp. Ar.* III, 124) how readily the familiar Platonic terminology flows from A.'s pen. At 77a5 he rejected this expression in favour of κατά πολλῶν (n. 2 above), but here and at 100a7 he himself uses it of the universal.

The 'archai' of knowledge

After the simile he restates the matter to make it clearer. First, one of the particulars¹ makes a stand in the mind (memory). He adds an observation vital to his doctrine, that 'although we perceive the individual, perception itself is of the universal, e.g. of man, not just of Callias a man'. In perceiving, say, Callias we perceive not only the indefinable traits in which he differs from Socrates but also the attributes common to them both as men, though we do not recognize them as belonging to the *eidos* until experience (memory plus *logos*) has enabled us to abstract and unite them.² With the first or lowest universal established, 'a new stand is made on that level' and so the philosopher continues, from the definable species dog, elephant, man to the genus animal, upwards till he reaches the *summa genera* common to all sciences, the ultimate categories of substance, quality and the rest, 'the unshakeable *archai* of all that exists, *qua* existing' (*Met.* 1005 b 10).³ Immediately he continues: 'Clearly then for us the *archai* of knowledge must be reached by induction, for that is the way in which sensation itself can implant the universal.'⁴ Consideration of the alternatives still open brings him finally to the conclusion that the possibility of knowledge must depend in the last resort on a kind of intellectual intuition (for so it is natural to translate *nous*).⁵ The argument is this (100b 5):

There are only two thinking states which invariably produce truth,

¹ Called here by A. *ἀσάφιστα*, indiscriminables, which logically speaking they are (p. 144 above).

² (There has been occasion to mention this doctrine in vol. IV, 415.) A. might have been on Plato's side when Antisthenes made his notorious remark: 'I see a horse but I don't see horseness' (vol. III, 214).

³ Here A. reaches his own *ἀντιστόχως ἀρχή* (ib. 14), as Plato's was the Form of the Good (*Rep.* 510b). The use of the word (surely deliberate allusion; it occurs nowhere else in A.) brings out both the resemblances and the differences between their two philosophies. Ultimate certainty was the demand of both. A. calls the *summa genera* *ἀντίπη* as not divisible into genus and *differentiae*. Trendelenburg in his ed. of *De an.*³ (1877) says (p. 146): 'Haec vero cur dicitur? Quo quid magis generale est, eo plures species subiectas tenet, eo pauciores vero in se ipso notas complectitur.' Ross compares *Met.* 1014 b 6 ff. For the contrast between Plato and A. here see vol. V, 432f.

⁴ Thus A. offers poor evidence for the common modern verdict that, as expressed by N. Griffin (*Scientia* 1969, 251), 'Although it was the ancient Greeks who first recognized induction, they failed to recognize its importance and placed the whole weight of scientific enquiry upon deduction.' Griffin's article gives a useful short survey of the present position of what has been known since Hume as 'the problem of induction'.

⁵ Barnes in his translation (Oxford 1975) prefers 'comprehension', which A. W. Price calls 'vacant' instead of the 'misleading' 'intuition' (*CR* 1978, 87). But cf. also pp. 192-4 below.

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scientific knowledge (*epistēmē*) and *nous*. All *epistēmē* is discursive,¹ i.e. based on reasoning, in which the premises or first principles must be known before the conclusion. How then can there be knowledge of the primary premises of all? They cannot be the subject of *apodeixis*, since there are no prior premises from which to deduce them, yet if the whole body of science is to be true, they must be the most indubitably known of all. Now besides *epistēmē* only *nous* infallibly gives truth, therefore *nous* is the source of all knowledge, the *archē* of the *archai*.²

What is this *nous*? Consideration of scientific method has brought us to induction, and it will be appropriate to introduce *nous* in this connexion (pp. 192ff. below). Aristotle is seeking his own explanation of a fact with which scientists have been faced in all ages: that in the last resort the assumptions on which their whole edifice is based – the so-called laws of nature, involving belief in the constancy of nature – are reached by a sheer leap in the dark.

Aristotle's views on the *archai* can be criticized on more than one ground. He is hot for certainty, and demands 'necessary truths'. Philosophic and scientific knowledge must be based on valid reasoning from first premises impossible to doubt. To the modern scientist, science is and will always be something tentative and subject to constant revision.³ There is no final goal, nor need every discussion proceed from assumptions or hypotheses which are themselves beyond argument.⁴ One may even accept the infinite regress so repugnant to common sense, and deny not only the necessity but the possibility of primary and indubitable first premises.⁵ No *archē* can be assigned to

¹ μετὰ λόγου γὰρ ἡ ἐπιστήμη, *EN* 1140b33.

² Cf. *EN* 1140b31–4128, ending λέγεται νοῦν εἶναι τῶν ἀρχῶν. In this sense νοῦς is infallible (100b7–8). Unfortunately our incorrigible philosopher sometimes uses νοῦς as a more general term for reasoning (ὃ διανοεῖται τε καὶ ὑπολαμβάνει ἡ ψυχὴ, *De an.* 419a23), which may erroneously unite incompatible notions (430b1–6).

³ A.'s choice of astronomy to exemplify a subject where the facts are sufficiently known (p. 180 above), now affords a rotten pathetic object-lesson.

⁴ 'In our search for truth, we have replaced scientific certainty by scientific progress' (Popper, *O.S.* II, 11). Cf. Popper's *C. and R.*, 66 and *O.S.* II, 270: The idea of teaching science as a body of knowledge 'is about to disappear and science can be taught as a quickly developing growth of bold hypotheses, controlled by experiment, and by criticism'. Popper may sometimes be controversial, but few scientists would disagree with this. I omit here his criticism of A. as an 'essentialist', which will be found in ch. 11 of *O.S.*

⁵ Philosophical arguments, i.e. those justifying first principles, are never formally valid, but either analytic or circular, according to H. W. Johnstone (as quoted by R. J. Burke in *Philos. and Phenom. Res.* 1966–7, 393).

The 'archai' of knowledge

knowledge, no starting-point to our thinking life, and there is something hypothetical about even the most elementary data of consciousness. Knowledge by intuition is a myth.¹ Again, for Aristotle what are now known as the laws of nature (to which no Greek expression corresponds) were generalizations, or deductions from generalizations, based on separate data perceived individually by the senses. Until recently this might have been generally agreed, as it was by men like Eddington and Whitehead, but it is a leit-motif of Stephen Toulmin's book on the philosophy of science that 'to treat laws of nature on the pattern of generalizations is positively misleading'.² He also denies that inferences in the physical sciences are of syllogistic type (pp. 33, 84). It is the familiar point: Aristotle saw the world in terms of substance and property, whereas, 'we are not seriously interested in enumerating the common properties of sets of objects, but are concerned with relations of other kinds' (*o.c.*, 33).

Aristotle's empirical tendencies might have taken him much further had there been no Plato. A very similar account of the progress from sensation to knowledge through memory and *doxa* 'coming to rest' in the mind is given in the *Phaedo*,³ in which Plato also explains that recognition of the Forms is first stimulated by sense-perception.⁴ The activity by which this is accomplished, *dianoia*, is one stage below *nous*, which grasps the *archē* and sees the Forms in the light of that – a downward path, not an upward one from particulars. Once the philosopher has seen the *archē* of all things, namely the Form of the Good, then is the time to start the reasoning or syllogistic⁵ process from the ultimate premise that it is the cause of all good, truth and understanding, and no man can conduct himself wisely without a glimpse of it. For

¹ So for instance C. S. Peirce the pragmatist. See the chapters on his theory of knowledge in Gallie's book, especially pp. 68ff. (The intuitional theory against which Peirce is arguing is that of Descartes.)

² Toulmin, *Phil. of Sci.*, 105. Cf. 77, 99, and ch. III in general, also 110, 145. T. is writing primarily of physics, and relegates empirical generalization (with some disdain?) to 'natural history', which is something different (pp. 74, 77, 82, 85). That A. was a superb natural historian is undoubted and not necessarily to his discredit. At the same time his characterization of natural events as events which happen *ἡ δὲ ὡς τὰ τοιαῦτα* bears some resemblance to a law. Exceptions, however, he simply regards (in this less optimistic than the scientist(s) as due to chance or nature's failure to master her material.

³ 96 b. Cf. also p. 181 n. 2 above.

⁴ 74 b. Cf. also *Rep.* 510c–11 d; vol. IV, 345 and 310.

⁵ ἀπὸ τῆς αἰτίας ἐκ συλλογιστικῆς, *Rep.* 517 c.

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Aristotle a transcendent Form of goodness made no sense (*EN* 1095 a 26–28, pp. 340ff. below), and it was simply through inductive generalization that *nous* by itself apprehended the forms, which were still there though immanent. Moreover *nous* for both philosophers was not a purely human faculty, but a link between man and divinity, for pure *nous* is God, as we shall see.¹

(3) INDUCTION²

In the *Topics* (105 a 13), a practical manual of debate, Aristotle defines induction (*epagōgē*) as we should, as the advance from particulars to universals. From examples, e.g. that the skilled navigator is the best and the skilled charioteer is the best, we conclude that the best in any occupation is the one who has learned his job ('the one who knows').³ Here, as often outside mathematics, his 'particulars' are in fact species, the smallest definable units. There is a remarkably Philebus-like passage at 109 b 14: 'One must look species (*eidos*) by species, not among the infinite multitudes . . . beginning the investigation from the primary groups [widest genera] and proceeding to the atomic', where 'atomic' must refer to atomic forms,⁴ as Alexander said. Elsewhere, however, he shows induction starting, as in practice it must, from awareness of genuine individuals. It is so for example in the account in the first book of the *Metaphysics*, already referred to, of the upward

¹ In *Met. A* and Plato's *Timaeus*. As hinted earlier (p. 100), one sometimes longs to explain the whole of A.'s philosophy in a single burst, like a rocket from which all the coloured stars flash out together. It has an essential unity. Unfortunately it is impracticable to deal simultaneously with physics, ontology, psychology, theology, cosmology and ethics, so we must be content with frequent reminders of their shared foundations. Meanwhile something about *nous* will be found in vol. II, 18f. and vol. IV, 253.

² Vol. III, 425ff., may be compared, and for the word *ἐπαγωγή* *ib.* 426 n. 2, Ross, *Analytics*, 481–5 and Bourgey, *L'observation et l'expérience chez A.*, 36f. An excellent introduction to the topic for readers of German is von Fritz, 'Die *ἐπαγωγή* bei A.', *S. B. Bayr. Ak.* 1964, 3, which includes discussion of the work of Bochenski, Sigwart, Joseph, Kneale, Carnap and Stegmüller. (See Bibliography for details of these.)

³ Cf. the opening of *An. Post.* bk 1. The actual example is obviously only an incomplete mnemonic note. A. credited Socrates with the introduction of inductive arguments into philosophy (*Met.* 1078 b 27; vol. III, 425) and he chooses a Socratic illustration, the argument for the thesis that *ἀσπὴν* is *ἐπιπικρὺν*. It was also Socratic, as Richard Robinson noted (*PED.* 42), that the cases cited should be themselves universals.

⁴ As at *Plato Soph.* 229 d; cf. *Phil.* 16 c–e. *Top.* 109 b 14 is not of course describing inductive argument, but simply illustrates A.'s inherited tendency to regard *infimae species* as atomic. But when he likes he uses *ἀτομα* of genuine individuals, as of *ὁ γῆς ἀνθρώπος* at 121 a 37f.

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progress from sensation to knowledge. So in practical matters, he says there, those with experience are more likely to succeed than those who have the theory of an art without it.

981a15. The reason is that experience is knowledge (*γνῶσις*) of individuals, art of universals, and all action and production are concerned with the individual. A doctor does not cure 'man', except incidentally, but Callias or Socrates or someone else with a proper name who happens to be a man.¹ Therefore if someone has the theory without the practice, knowing the general rule but not the individual case which falls under it, his treatment will often fail, for it is the individual whom he has to treat.

Here Aristotle the empiricist breaks through his Platonic shell. He is speaking, of course, of the application of knowledge to action, not of the philosopher's pursuit of knowledge for its own sake, but the same need was clear to him in both: all knowledge alike depends in the last resort on the correct interpretation of that direct acquaintance with individuals which is furnished by the senses.

In comparison with syllogism, or deduction, Aristotle notes as general characteristics of induction that it is more persuasive and clear, more easily learned through the senses, and more readily available to the mass of men; the syllogism is more compelling and more efficacious against contentious people.

So he speaks when his subject is the actual practice of argument in living controversy: induction and syllogism (or *apodeixis*) stand opposed as the two opposite types of reasoning.² In the *Prior Analytics*, however, as already mentioned (p. 149), he attempts to unify the various kinds of inference by reducing them all to syllogistic form. There, in spite of having just distinguished syllogism and induction as

¹ (Similarly at *EN* 1097a11-13, 1180b8-10.) Neither therefore 'man' nor 'a disease'. In the present century Sir Henry Cohen remarked (*Philos.* 1952, 157) that there are no diseases, only sick people, no two of whom have exactly the same symptoms. Cf. F. G. Crookshank's essay in Ogden and Richards, *Meaning of Meaning*, Suppl. II, and an anonymous specialist writing in the *Sunday Times* for 22 June 1958: 'Nothing is more abstract than a disease . . . There is in fact no such thing as a disease. Strictly speaking, the only thing that we can actually observe is a person reacting to a set of noxious stimuli, some of which come from outside, and some from within.' Both the resemblances and the contrasts to A. in this attitude are worth pondering. Without his philosophical training by Plato he might have been the first great figure in the empirical tradition. It should be added that in *EN* 10 (80b7-23) he deals more fully and cautiously with the question how far the medical practitioner should be concerned with the individual patient and how far with general principles.

² Often, e.g. at *An. Pr.* 4273, *An. Post.* 7125.

the two alternative sources of belief, he goes on to describe induction as the source of a syllogism: 'induction', he says 'or rather the syllogism that originates an induction'.¹ This he illustrates with the example of the animals that have no gall.² As an ordinary inductive argument it would run: 'This gall-less animal and this one and this one are observed to be long-lived, from which we conclude that all gall-less animals are long-lived.' As a syllogism this is plainly invalid. It is of the third figure, in which the middle term is subject in both premises and narrower in extent than either the major or the minor, and can only yield a particular conclusion ('Some gall-less animals . . .'). This is shown up formally if we apply the Aristotelian test of conversion to first figure, turning 'M-P and M-S therefore S-P' into 'M-P and S-M, therefore S-P', where M stands for man-horse-mule (Aristotle's instances), S for gall-less and P for long-lived. Man, horse and mule have no gall and are long-lived, therefore all animals without gall are long-lived. This follows necessarily only if one can guarantee that man, horse and mule are the only gall-less species. The permanent weakness of induction, considered as a purely rational form of argument, becomes apparent as soon as it is forced into the rational framework of the syllogism. To justify the universal conclusion, it must be possible to add the proposition 'Man, horse and mule make up the whole class of gall-less animals'. So Aristotle is forced to qualify his description of induction as an argument syllogistic in form with the proviso 'If then C [the particular long-lived animals] is convertible with B [gall-less]' and 'But one must imagine C as composed of all the particulars, for the induction is carried out by going through all the cases' (68b 23 and 28).

This is so-called perfect induction, in which the universal conclusion is not drawn until every relevant individual has been examined. It does not of course represent the way in which inductive argument is ordinarily applied, either by ourselves or by Aristotle. Is it, we may ask, either (a) practicable or (b) any use?

(a) In the great majority of scientifically interesting cases, it is

¹ By retaining the 'or rather' of the Oxford translation here, I do not mean to question Hamlyn's interpretation in *Phron.* 1976, 169. It means 'or, as one should rather say' ('to put it more precisely').

² Any who are interested in the biology as well as the logic of this example are referred to the additional note on pp. 194-5 below.

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impossible to examine every instance before drawing a conclusion. It can be done, of course, for certain artificial communities like schools or clubs, and conversely there are some fields of knowledge in which even a single example suffices to prove the law. This applies not only to mathematics, as Aristotle knew (*An. Pr.* 67b24 etc.), but also, it appears, to certain chemical laws of which he could know nothing.¹ Nevertheless the common use of inductive technique to justify the attribution of a certain characteristic to all members of a natural species (like the notorious 'All swans are white') cannot be based on exhaustive examination of individuals. 'Who', as Bertrand Russell pertinently asked, 'can enumerate all the members of the class of earwigs?' (Even if our list of gall-less species had been exhaustive, it could not have been reached by examining every member of each.) If on the other hand one is treating *infimae species* as the units and proceeding from them to higher generalizations, it may be possible, before forming a judgement about a genus, to examine all of its constituent species; and in formal logic Aristotle did prefer to take species as the units (p. 146 above), because anything more individual was indefinable and not a suitable object of discursive thought. Hence in his formal treatment Aristotle may have felt justified (though the justification could only be partial) in speaking of perfect induction as a possible goal.²

(b) But it is worth while? Have we made any inference at all? If after observing only a few thousand human beings, my reason tells me I have the right to pronounce 'All men are tailless', I may justly believe that I have used my reason to add to my knowledge. But suppose I have observed that the three species of animal which lack gall are long-lived, and suppose for the sake of argument that I know these to be the only species thus lacking. If I then say 'These gall-less species are

¹ C. Sigwart, quoted by von Fritz, *Εἰσαγωγή*, 10. Cohen and Nagel (*Introd. to Logic*, 178) give as example of a universal proposition established by examining all its instances 'All known planets revolve around the sun'. But does not the introduction of 'known' suggest a suspicion of cheating?

² In the passage just quoted (*My Philosophical Development*, 87), Russell continues immediately: 'Nevertheless, we can make statements (true or false) about all earwigs, and we do this in virtue of the intension by which the class is defined.' In this sentence 'intension [or connotation] by which the class is defined' corresponds to the Aristotelian εἶδος. Elsewhere, however, he warned that 'if an induction is worth making it may be wrong' (*Outline*, 83). The black swan may turn up at any moment.

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long-lived, and from this I infer that all gall-less species are long-lived', have I done anything but uselessly repeat, in a more cumbrous form, what I already knew? Yes. To have in our minds the concept of a class is an advance from acquaintance with individuals as such, even if our acquaintance had been with every member of the class in isolation. In Aristotle's terminology (*An. Post.* 74a31), we knew them all numerically (κατ' ἀριθμὸν), but now we know them by their form, or specifically (κατ' εἶδος). The advance is twofold:

(i) We are a step nearer to the discovery of causes. He who knows only that man is gall-less and long-lived, horse ditto and mule ditto, without coordinating his knowledge further, is unlikely to establish an essential connexion between lacking gall and being long-lived. But when he has explicitly drawn the conclusion 'All gall-less animals are long-lived', it immediately suggests that there may be some causal connexion between lack of gall and longevity (which was in fact a question that interested Aristotle and his medical contemporaries). So 'the universal', as he says, 'is valuable because it reveals the cause'; and only that, in his view, amounts to *knowledge* of the fact itself.¹

(ii) Once established in the mind as a single concept, the universal becomes the basis for higher generalizations, which it could not do so long as it was seen simply as a series of disconnected instances. In the terms of his own epistemology, we have now in our souls the 'first universal', and 'a new stand is made on that level'.²

Once again we are seeing the familiar, all-important operation of abstracting (better 'extracting') the form (*eidos*) from particulars, separating from their matter the set of common qualities which mark off those particulars from the rest of nature as belonging to the same species (*eidos* again). Without this 'one over the many', discernible in the flux of becoming, science would be impossible. So far Aristotle reasons as a Platonist, but he sees no need to suppose it a transcendental unity *outside* the world. It is in the world but discernible by the

¹ *An. Post.* 88a5. Cf. 85b26 and the beginning of *An. Post.* 1 ch. 2 (p. 172 above).

² *An. Post.* 2 ch. 19, p. 183 above. With πάλιν ἐν τοῖς τοῖς (100b1) he is continuing the language of the battle simile. When one man by standing his ground has encouraged another and then another, first a platoon may re-form, then a company and so on. A platoon is more than its separate members.

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philosopher who has fashioned the appropriate tools and techniques for its discovery.¹

So much for the formal treatment of induction within the framework of analytics. But as commonly used induction 'leads from the particular to the universal and from the known to the unknown' (*Top.* 156a5). As Aristotle showed in the last chapter of the *Posterior Analytics*, he was fully aware that the search for knowledge cannot start from perfect induction. Our understanding of the natural world must begin from observation of the innumerable things and creatures around. Hence his statement that sensation itself conveys our first awareness of the universal. By what stages this develops into knowledge, both theoretical and practical, he has described in that passage, and in the *Ethics* he says: 'Induction is the *archē* of the universal itself, whereas syllogism is derived from the universal' (1137b28). Aristotle emphasizes equally, and with perfect consistency, that sensation does not of itself yield knowledge and that it is an indispensable precondition of it. From many possible passages two from the *Posterior Analytics* will serve to illustrate this.

(i) 87b28. Sensation does not yield knowledge. Even if it conveys the 'such', not just the 'this here' [cf. 'We see not only Callias but Callias the man', p. 183], its object must be singular, here and now. We cannot perceive the universal which covers all cases. It is not 'this' or 'now', or it would not be universal, a term which we apply to what is always and everywhere. Since therefore demonstrations (*apodeixeis*) are universal and universals cannot be perceived, sensation clearly cannot yield knowledge... Sensation is of the individual, but knowledge implies recognition of the universal... The universal is valuable because it reveals the cause. *First principles however are another matter.*

(ii) 81a38. It is also clear that the loss of a sense necessitates a corresponding loss of knowledge, for (1) we learn either by induction or by *apodeixis*, (2) *apodeixis* is achieved through universals and induction through particulars, (3) it is impossible to grasp the universal except by induction... (4) induction is impossible without sensation.²

¹ See ch. vi for this.

² A little lower, at 88a10, he says: 'Knowledge of anything demonstrable cannot be acquired by sensation.'

³ The idea that the common *eidos* is a reality, of which sensation itself makes us aware in a rudimentary way, has its parallel in twentieth-century science. W. H. Thorpe writes in *Biology*

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As a vehicle of truth and knowledge, then, induction cannot be formally perfect, and Aristotle believed that the intellectual disposition¹ called *nous* (with its action *noein*, and *noēsis*) was capable of acting as a kind of intuition. It gives one a sense of recognition (ὥσπερ ἀναγνώριζοντας) which he likens to the *anamnesis* of Plato's *Meno* (*An. Pr.* 67a21-24). By its means, after examining a number² of particular specimens or cases we can say we know that there is a common form or universal law underlying them which will hold good of all the unexamined instances of the same kind. The close association of *nous*, form and causation constitutes Aristotle's justification for claiming that future instances will resemble those already known,³ an assumption commonly made by scientists and by others in everyday thinking. If I observed a creature looking in other respects like a man but waving a large, bushy tail, I should say to myself (if fraud was excluded) 'This cannot be a man' rather than 'Since I have not myself, and know no-one who has, examined all the men in the world, I am in no position to say whether or not there are men with tails.' *Nous* is Aristotle's answer to the question by which Hume confessed himself baffled, how to reconcile the two principles 'that all our distinct perceptions are distinct

and the Nature of Man (1962), 86f.: 'But this is not to suggest that [a baby] is building up a picture of the external world from entirely random unordered stimulation. This is not so. The world that actually meets our senses is not a world of things about which we are invited to discover facts. The world of pure sensation is so complex and full that more sensitivity to stimuli would result only in confusion. Out of this bedlam, our sense-organs must select certain predominant forms if they are to make reports of things and not, as Langer says, merely of dissolving sense. An object is not a datum but a form, which is experienced as a living individual thing, as a symbol for a concept. To quote her: "this unconscious appreciation of form is the primitive root of all abstraction, the keynote of rationality, which lies deep in our pure animal experience." And it is our constructive powers of perception which supply a humble but essential element for the building of the moral as well as the intellectual and aesthetic aspects of our mental natures.' The reference is to S. Langer's *Philosophy in a New Key*. Italics are mine.

¹ At 100b5ff. *ἐπιστήμη* and *νοῦς*, along with *δύναμις* and *λογισμός*, are called *πρὶς τὴν διάνοιαν ἔχουσιν*. *ἔχουσιν* is a difficult word to translate, but I do not think 'faculty' (usually *δύναμις*) would be very misleading. Perhaps the best comparison is with *Top.* 156b39 πιστεύοντες τῇ ἔξει, where the *ἔξις* that gives the boastful disputants their confidence is a state of readiness for (or facility in) argument.

² A. does not face the unanswerable question how many observations may be necessary before one can be certain of having isolated the essential properties that make up the form. It will obviously differ in different cases, but in the *PA* he does envisage the danger of premature generalization. (See additional note, on pp. 194f. and *GC* 316a6ff. quoted on p. 197). Natural endowment and practice would no doubt develop in a scientist, as they do today, the flair for this which is *nous*.

³ Cf. Owens, *Doctrine of Being*, 81, 84.

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existences, and that the mind never perceives any real connexion between distinct existences'.¹ Occasionally it is at least verbally equated with sensation in Aristotle's notes: 'Universals are reached from particulars, and of particulars one must have sensation, i.e. *nous*.'² If we were on the moon when it suffered eclipse, we should not ask either whether or why eclipses occur, 'but it would be immediately clear, for we should be able to know³ the universal through sensation. The eclipse itself being now visible, sense-perception would also tell us that the earth is now blocking the sun's light, and from this would arise the universal rule.'

All this was made natural to Aristotle by contemporary and historical usage of '*nous*' and '*noēsis*'. As far back as Homer it means seeing and recognizing, or suddenly grasping, through an act of sensation, the realities of a situation. (See vol. II, 17f.) *Nous* was for Aristotle as for all Greeks the highest of our faculties. Since it is that by which we are first enabled to pick out the universal in the particulars, seeing the one through the many, it is in the last resort that on which depends our knowledge of the basic principles or *archai* of deductive science – the highest generalizations and the axioms from which scientific reasoning

¹ Appendix to the *Treatise*, Everyman ed., 319 (italics Hume's). This is mentioned by Grene *Portrait of A.*, 45, who, to the question what A. made of the puzzle, answers 'He never saw it'. Whatever may be thought of his answer (and the views of Thorpe and Langer suggest there is something in it), this statement is surely astonishing. For A, it was simply untrue that 'the mind never perceives any real connexion between distinct existences'. It perceives their formal or specific unity, which is a real one. If it is objected that to suppose him aware of Hume's dilemma is anachronistic, I would reply that since he himself states categorically both that the objects of sensation are unknowable and that sensations provide the first step towards knowledge, it or a very similar question cannot have been absent from his mind.

² *EN* 1143b5; cf. *Met.* 1036a6. How often is A.'s terminology confusing, but his thought perfectly clear! At *De an.* 432a2 (using his psychological terminology according to which the human *psychē* is the form of the living, sentient and thinking body, pp. 282ff. below) he contrasts *voūs* as the 'form of forms' with sensation as the 'form of sensibles'. This does as well as the equation of the two to make the single point that the essential object of sensation is the sensible individual, though *vōnōis* gives us at the same time a glimpse of its specific form.

³ *An. Post.* 90a26–30. A loose use of *εἰδέναι*, not at all surprising in A. As an insufficient but necessary condition of knowledge, sensation gives a 'sort of' knowledge (*Phys.* 247b6 in Ross's text): the knower *ἐπιστάτωι τῶς τὰ καθόλου τῷ ἐν αἰσῇ*. With the above passage cf. 88012: 'In some cases if we could witness ["see" in its literal sense] the event we should stop enquiring, not as knowing by the act of seeing but as having, through seeing, got at the universal.' He adds an example from a contemporary theory about burning-glasses. If we could see the perforations in the glass, and the light streaming through, it would be clear to us why it burns, through seeing each case individually and intuiting (*vōnōis*) simultaneously that it is the same in all. *Noūs* and sensation are analogous in that each bears the same immediate relation to its object. '*Noūs* corresponds in the soul to sight in the eye' (*Top.* 108a9–11).

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in any subject must start. 'By *nous* I mean the original source (*archē*) of scientific knowledge' (*An. Post.* 88b36).

So much for *nous* in relation to induction. In Aristotle's psychology it had a network of related meanings, and will recur elsewhere.¹

BIOLOGICAL NOTE: THE GALL-LESS ANIMALS

Light is thrown on Aristotle's choice of this example by *PA* 4 ch. 2, where he discusses the claim of some older physiologists that lack of gall or bile was conducive to longevity. The three species mentioned in the logical works do not correspond to those in the biological. *HA* 506a21-b5 lists deer, roe, horse, mule, donkey, seal, some kinds of pigs, elephant and dolphin. In a similar list at *PA* 676b28-77a3 he remarks that the camel has no separate gall-bladder, but 'what might rather be called "veins of bile"'. Some men have it, others not, and the same is true of sheep and goats (676b29-31. 'In men its absence is rare', Peck *ad loc.* in Loeb ed.). 'This', he continues, 'has caused a dispute about the species as a whole, for the observer assumes that whatever be the condition of the specimens he has happened to meet is the condition of all' - a warning against premature generalization.² F. H. A. Marshall in his foreword to the Loeb edition adds (p. 5): 'In the section on the gall-bladder, as in so many other passages in his works on natural history, it is truly remarkable how correct Aristotle is in his statements. He points out that the gall-bladder is not found either in the horse and ass or in the deer and roe, but is generally present in the sheep and goat.'

Von Fritz ('Εποχὴν, 45) obtained further information from his colleague the Professor of Zoology and Comparative Anatomy at Munich, which clears up a possible confusion.

'All animals mentioned by Aristotle as lacking gall do in fact produce it but except for man have no gall-bladder. The gall flows direct from the liver, where it is produced, to the digestive system where it is used. The 'sweetness' of the liver noted by Aristotle in the gall-less animals [677a22-25] is explained by the fact that when a beast is slaughtered the glycogen stored in the liver is transformed into sugar. Conversely the observed bitterness of the liver in animals which have gall-bladders is the result of gall from the gall-bladder entering the liver by osmosis, which cannot happen in animals without the bladders. Thus Aristotle's example depends on genuine observation, though inadequate in two respects: first, the absence of

¹ Pp. 308f. below. An amusing example of another use is Plutarch's anecdote about A.'s comment on Callisthenes, executed by Alexander: 'He was a powerful talker, but had no *nous*' (p. 38 above).

² Such premature generalization is possible if one confuses a *συμβεβηκός* with a *καθ' αὐτό* predicate. See pp. 147f. above.

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a gall-bladder was mistakenly equated with the absence of the gall itself;¹ secondly, it was mistakenly believed that man had no gall-bladder [? 676 b 29-33, W.K.C.G.], which was probably partly due to the fact that human anatomy was at that time very little studied.'

I include this note, which may seem out of proportion, as a reminder that biology, and especially zoology, was one of Aristotle's leading interests and made great progress under his and his colleagues' hands. In a general work this fact must inevitably receive less attention than it deserves, especially in its details; yet anyone wishing to understand the motivation of his philosophy must keep it constantly in mind.

(4) SYLLOGISM, INDUCTION AND THE QUEST FOR KNOWLEDGE

Let us not forget that arguments from the *archai* and to the *archai* are different. Plato did well to raise the question whether progress is from or towards them. . . . We must begin from what is known, but that is ambiguous: some things are better known to us, others absolutely. Presumably we must begin from what is known to us.

EN 1095 a 30-b 4.

A brief recapitulation may not be superfluous. In his account of syllogism, or deductive inference, Aristotle showed the progress of science (*ἐπιστήμη*) as consisting of argument downwards from certain primary premises (*προτάσεις πρώται, ἀμεσοί*) or widest generalities to particular conclusions. The conclusions therefore are reached by a process of discursive reasoning (*ἐπιστήμη ἀπασα μετὰ λόγου*) from premises logically prior or better known (*προτάσεις πρώται, ἀμεσοί*). Since no progress can be made by going back for ever seeking further premises from which to deduce our premises, we must assume a set of propositions or principles which are logically *prime*. These are, for a particular science like zoology the widest genera with their definitions, for mathematics the axioms and the admission and definition of certain fundamental concepts like number and extension and for science in general – what Aristotle calls *epistēmē* and we might call the philosophy

¹ Peck regularly translates *χολή* by *gall-bladder*, except where the sense makes it quite impossible (even at 677a 21-22, where though it is not repeated, it has to be rendered first 'gall-bladder' and then 'gall').

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of science – (a) the categories, substance, quality etc., into which any object of knowledge must fall, and (b) a few logical axioms whose acceptance he demanded, such as the laws of contradiction and excluded middle.¹

These primary postulates are evidently not known by deductive reasoning from prior premises, which *ex hypothesi* there cannot be. How we know them was stated in the last chapter of the *Posterior Analytics*. 'It is clear then that it is by induction that we come to know the first principles, for by this means sensation itself implants the universal.' The human *psyche* is such as to be capable of an argument of this type: *a*, *b* and *c* are particulars possessing the same essential form *f*; *a*, *b* and *c* can be observed to possess the attribute *p*; hence it may be inferred that all members of the species *f* possess the attribute *p*. It was inductive inference that led to the abstraction of the common form *f* in the first place, and induction again that led to the inference that all members of that form or species possess the attribute *p*. When therefore we start to reason syllogistically from the premises 'All *f*'s are *p*', the way we arrived at the premise itself is the way of induction.

So much for recapitulation. It is still sometimes said that the methods advocated by Aristotle are deductive rather than inductive.² This is natural if great attention is paid to his formal logic, in which he tried to reduce all argument to syllogistic form. We also saw that, within the strictly formal limits, the feat was not impossible. But it becomes impossible as soon as the attempt is made to apply logic to the scientific search for truth, because it provides no means of making the first generalizations from the mass of unordered facts by which we are

¹ A. is at an interesting stage in the history of knowledge. The several scientific disciplines are still a part of philosophy, and indeed fall within the province of the same philosopher; but at the same time it is with A. that one can see the first signs of future breakaway and specialization, notably in this idea that each separate science has its own *ἀρχαί* as well as those common to *ἐπιστήμη* or *φιλοσοφία* as a whole. Complete separation was long in coming. The title 'Professor of Natural Philosophy' at Cambridge is doubtless only an interesting fossil, but it must have meant more when in 1795 one Charles Hutton produced a Dictionary of 'the several subjects comprized under the headings Mathematics, Astronomy, and Philosophy both natural and experimental'.

² Cf. p. 183 n. 4 above. But doubtless some will still agree with Grote that his practice was not up to his preaching (*Arist.* II, 264): 'While A. thus declares Induction to be the source from whence Demonstration in these separate sciences draws its first principles, we must at the same time acknowledge that his manner of treating science is not always conformable to this declaration, and that he often seems to forget Induction altogether.'

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surrounded. And it is hardly an exaggeration to say that to do this was Aristotle's chief philosophical aim.

I spoke earlier of what I called his 'commonsense realism'. This is manifested in his distrust of any argument which he could stigmatize as *logikon*, 'abstract'. A constant complaint against his predecessors is that they argued 'abstractly' (*logikōs*) rather than 'according to nature' (*physikōs*). This applied notably to Parmenides, but is especially frequent in his criticism of Plato's Forms.

Met. 987b9: To make unity and numbers exist apart from sensible things (in which he differed from the Pythagoreans), and the introduction of the Forms, resulted from the abstract nature of his investigations.¹

Met. 1069a26: The moderns [*sc.* Platonists] regard universals as substances, for the genera are universals, and these they prefer to call principles and substances owing to the abstract nature of their enquiries.

GC 316a6-14 gives both sides of the contrast:

Therefore those who are better acquainted with natural phenomena are better able to posit the kind of principles which will hold together over a wide area, whereas those who as a result of much abstract discussion have lost sight of the facts are too ready to give an opinion based on inadequate observation. The present subject [of indivisible magnitudes] shows up the difference between investigating *logikōs* and *physikōs*. The one [Platonic] school says there must be indivisible magnitudes because otherwise the ideal triangle will be many, but Democritus would appear to have relied on more relevant arguments drawn from nature.²

¹ διὰ τὴν ἐν τοῖς λόγοις σκέψιν. Cf. Plato's own confession in the *Phaedo* (99e): εἰς τοὺς λόγους καταφεύγοντα ἐν ἑκείναις σκοπεῖν τῶν ὄντων τὴν ἀλήθειαν. To A. it was indeed a 'running away' from reality. A.'s expression here has elicited a remarkable variety of renderings: 'the study of things in propositions' (Taylor), 'enquiries in the region of definitory formulae' (Ross, similarly 'definitions' Owens, Wedberg), 'la considération des notions logiques' (Tricot), 'seine dialektischtheoretische Denkweise' (Düring, *Arist.*, 249; and on 250, 'seine spekulative Denkweise'), 'enquiring into the truth of things by arguments' (Evans), 'interest in dialectic' (Warrington, Hope). The idea reappears at *Cael.* 293a29: those who do not put the earth at the centre of the universe 'rely on *logoi* rather than phenomena'.

I cannot agree with Owen (*Symp. Ar.* i, 176 n. 4) that because A. says at 1029b13 *πρῶτον ἀπαιτῶν τινα περὶ αὐτὰ λογικῶς* ('first let us make some abstract linguistic remarks', Ross), 'this describes his own method'. For the different use of it in the *Analytics*, where it is opposed to *ἀναλυτικῶς*, see 82b35-6, 84a7-8, with Ross's notes. *λογικόν*, like *λόγος* itself, has a host of meanings, and the context must decide.

² It is interesting to speculate how A. would have turned out if he had known the work of Democritus but not Plato's. Needham, generously for one of his views, suggests (*Hist. of Embryol.*, 59) that 'Perhaps A. would not have made so many great discoveries if he had been more of a Democritus. For teleology is, like other varieties of common sense, useful from time to time.'

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Aristotle would probably have maintained, unlike the modern scientist or philosopher of science, that the observations should be recorded with a completely open mind, and any hypothesis be based on them – a situation impossible even if it were desirable. (See pp. 110–11 above.) For him everything starts from induction, which with syllogism should be seen as two stages of the same process. The emphasis laid on each may vary, but they cannot properly be regarded as separate, contrasting methods. The formal perfection of the syllogism may give an impression of infallibility and make it more ‘compelling’ (βίαιοτικώτερον, *Top.* 105a18), and one is tempted to see the upward, inductive process as lacking in finality because based on an incomplete examination of particulars. In fact, however, the major premise of the syllogism is just such an inductive generalization, and the upward process has preceded the downward in every case. Here Aristotle acknowledges his debt to Socrates: ‘One may justly accord two things to Socrates’, he says (*Met.* 1078b27), ‘inductive arguments and general definitions, both of which are concerned with the *archē* of knowledge; but Socrates did not allow separate existence to universals or definitions.’ Socrates’s attempts to make his interlocutors abstract the *eidos* from the various examples with which they first presented him (e.g. at *Meno* 78c) constituted an early attempt at the inductive method as understood by Aristotle.¹ But whereas Socrates had been interested in applying it to moral questions (*Met.* 987b1), Aristotle sought to apply it to the whole field of knowledge. Science, he claimed, depends on statements of cause which ‘could not be otherwise’; but our knowledge of these necessary truths (truths about forms and essences) is derived by induction from sense-perception.

This point he expresses by his distinction between what is nearer and more easily known to ourselves and what is more knowable, in its own nature, and to this we must now return. (Cf. p. 174 above).

An. Post. 71b33–72a5: The terms prior and more knowable are used in two senses, for it is not the same thing to be prior in nature and prior in relation to us, nor more knowable² in nature and more knowable to us. By

¹ On Socrates and induction see vol. 11, 425–30.

² Barnes may be right to say (*An. Post.*, p. 100) that ‘known’ is better than ‘knowable’ here; but it will hardly do to avoid the difficulty of finding a comparative form for ‘known’ by substituting ‘familiar’. The γνωριμώτερον ἀπλῶς are certainly not ‘more familiar’.

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prior and more knowable in relation to us I mean those things which are nearest to sense-perception, by prior and more knowable in an absolute sense, those which are further from sensation. Now the things which are furthest from sensation are the universals, and those that are nearest are the individuals.

Met. 1018b32-34: Logically speaking universals are prior, but in sensation individuals precede them.

Met. 1029b4-12: Learning proceeds like this for everyone, from what is less knowable by nature to what is more so. Just as in conduct the task is to start from what is good for each and make what is good in general good for each, so now the task is to start from what is knowable to oneself and make what is knowable by nature known to oneself. What is known and primary to people individually can often be known only to a slight extent, and contains little or no reality.¹ Nevertheless from what is poorly known but known to oneself one must try to understand what is knowable in the universal sense, passing, as has been said, by way of just those things that one understands.

This distinction determines the scientist-philosopher's programme. Starting from perception of individuals, and respecting the primary and indemonstrable *archai*, he forms by induction concepts of increasing generality. These give a truer kind of knowledge – knowledge of what is logically prior – which he uses to form the premises of demonstrations ('scientific syllogisms').

Is the progress of knowledge from particular to general or vice versa? So far the answer seems obvious. We must start from the evidence of our senses, which makes us directly aware of the particular, and proceed from that to general concepts. Yet here as in other matters Aristotle's expression, as he singlemindedly pursues one train of thought or another, is such as to have misled scholars into accusing him of doubt or inconsistency. The trouble arises from his statement at the opening of the *Physics*:

Every branch of knowledge and understanding which has principles (*archai*) causes and elements, develops through acquaintance with these. That is what we mean by knowing a thing, namely knowing its primary causes and principles down to its simplest elements. Evidently then in the case of

¹ Individuals – the 'primary substances' – have little or no reality? This will have to wait until the next chapter.

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natural philosophy itself we must begin by trying to determine its principles. The natural progress is from what is more knowable and plain to us to what is plainer and more knowable by nature,¹ for what is knowable relatively to us is not the same as what is more knowable absolutely. That is why the method must be to advance from what is naturally more obscure but plainer to us to what is clearer and more knowable by nature. Now what at first appears to us clearly and vividly is rather what is confused, the elements and principles of which become known later as we analyse the mass. Hence we must advance from generalities to particulars,² for the whole is more accessible to sensation, and the universal is a kind of whole, embracing many part-like elements. The relationship is something like that between name and *logos*: a name, for instance 'circle', signifies an undifferentiated whole, but the definition analyses it into its various components.³ Similarly children begin by calling all men 'daddy' and all women 'mummy', but later distinguish each one.

The italicized words look at first like a flat contradiction of the method elsewhere advocated, depicting the advance of knowledge as from the particular (sensible object) to the universal (definition, law or axiom), and so we have such verdicts as 'Aristotle appears to be in some doubt on this point' (Evans). But he is simply looking at the subject from another angle. The key lies in the mention of the linguistic behaviour of children, their primitive erroneous generalization. 'The general' or 'universal'⁴ refers to something different in each account. In the *Analytics* it signifies the properly thought-out and defined concept of a specific or generic form which the mind has

¹ So again at *De an.* 413a 11-12, 'ἐκ τῶν ἀσαφῶν μὲν φανερωτέρων δὲ γίνεται τὸ σαφές καὶ κατὰ τὸν λόγον γνωριμώτερον.

² Σὺ δὲ ἐκ τῶν καθόλου ἐπὶ τὰ καθ'ἕκαστα δεῖ προεῖναι, 184a 23.

³ I hardly think that A. could have spoken of the relation between *νοῦμα* and *λόγος*, using the example of a circle, without having Plato in mind. (Cf. *Ep.* 7, 342 b; vol. v, 404.) Partly for this reason, of the two alternatives mentioned by Ross (*Phys.*, 457f), I would suppose him to mean by καθ'ἕκαστα the separate components of the definition (*ὁρισμός* 184b 2), i.e. genus and differentiae. This suits the context well. What the philosopher has to do is διαπεῖν or διορίζειν τὰ συγκεχυμένα, take the confused crowd of dogs, trees etc. and extract definitions of them, as of their genera and sub-species. The distinction between knowable to us and knowable absolutely reappears in connexion with definition at *Top.* 141b 3ff. Genus and differentiae are more knowable than and prior to species in the absolute sense because if they are abolished the species disappears too. (The note here sounds like an afterthought: notice *τρόπον τινά*, there is 'a kind of analogy'.)

⁴ I have translated the same expression τὸ καθόλου as both. Quite literally it means 'the "as a whole"'. It must be emphasized that its application here to τὰ συγκεχυμένα is most unusual. For the definition of its standard use see *An. Post.* 73b 26f.

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abstracted by analysing the individual objects of sense, the result of a completed process of induction.¹ Here in the *Physics* it means the first unanalysed flood of impressions which strikes our senses continuously. The *Analytics* maintained that when we see Callias we are made aware for the first time, in a rudimentary way, of the form of man, of which repeated experience plus intellectual activity can give us knowledge. But in the course of an ordinary day we may see dozens if not hundreds of men. A rational creature just arrived from another planet, having pointed at Callias and been told 'Callias', might say to himself, 'Ah, more Callias', like the child who calls the visitors 'Daddy'. Nor will our senses have been bombarded only with men, but with trees, dogs, houses and many other kinds of object. These confused impressions (συγκεχυμένα) are what he refers to in the *Physics* as 'the general', what presents itself 'as a whole' (καθόλου), from which, to gain knowledge, the seeker must learn to identify and define each sort separately.

Thus when Aristotle says that knowledge advances from particular to general, he means from the perception of a single individual like Callias, via the sight and sound of other individual men, to an understanding of the concept 'man'; by the advance from general to particular he means that from a confused mass of immediate sensations, an infinite plurality of which no real knowledge is possible,² we advance to each single concept, the ἐν κατὰ πολλῶν, the unity which pervades and is predicated of every member of a definable class.

A final note: potential and actual knowledge. We are familiar with Aristotle's steadfast belief that though the foundations of knowledge are laid by sensation, sensation, for reasons expounded in the *Posterior Analytics*, is not itself knowledge. To know x is to know its cause, and only the universal supplies the cause (p. 173 above). In the last chapter of *Met. M* he has given some interpreters a shock in tackling what has struck him as a difficult problem for himself as well as the Platonists. If, he says (evidently with the Platonic Forms in mind), one denies that real substances (οὐσίαι) exist separately in the way we say that individuals do, substance as we understand it is abolished. If on

¹ The *apeiron* of Plato, *Phil.* 16 d-e. The whole passage 16c5-17a5 offers a foretaste of A.'s methods. Cf. also *Met.* 1013b32-34 with *EN* 1029b33-4.

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the other hand one grants them separate existence, what becomes of their elements and principles? It is not the problem that is of interest at the moment (for that see the judicious discussion by Annas in *Met. M and N*, 188-92), but a remark which he makes in suggesting a solution. He first repeats (1086 b33), with reasons, what one expects, that knowledge is of the universal, then proceeds at 1087 a15 as follows:

This presents *the greatest difficulty* of all, but it is true in one sense and not in another. Knowledge, like the act of knowing, is twofold, potential and actual. The potentiality, as matter, is universal and indefinite, and so is its object, but the actuality, being definite, has a definite object, *this* knowledge of *this* thing. The eye sees *colour* incidentally, because *this* colour which it sees is colour, just as the letter *a* which the reader looks at is *an a*. Evidently knowledge is in one way universal, and in another way not.

This is another example of the sort of thing for which I tried to prepare the reader in ch. v. We are not dealing with works prepared for publication, but with notebooks, and faced with different problems Aristotle is always ready to try out an *ad hoc* solution. Apparent obscurity or inconsistency may reveal nothing more substantial than a variation in terminology. One thing certain is that 'universal and indefinite' (ἀόριστος) cannot describe the object of definition, the articulated concept of the form, which gives the knowledge of which perception provided the new material. In that sense sensation itself was potential knowledge, actualized by induction. (Cf. p. 182.) The 'indefinite universal' as potential knowledge must be the first awareness of, say, man evoked by the sight of a single individual (p. 183 above; the example of colour here is precisely parallel). There is a sense in which 'sensation itself implants the universal', and his expression here does not affect the kernel of his epistemology.

XI

SUBSTANCE¹

The Aristotelian approach is the reverse of the Parmenidean. Parmenides saw Being as one, and asks how it could be many. Aristotle sees beings as manifold. He asks: How could any one nature account for their differences?

J. Owens

'What is' is spoken of in many ways.

Aristotle²

The subject of this chapter is ontology, the name of which, though a modern coinage, seems an apt one for Aristotle's study of what *is* (*on*) or *are* (*onta*), of what in fact it means to *be*. It may prove hard to explain clearly Aristotle's answer to what he himself called 'the eternal question' of the nature of being. The answer itself may even have

¹ The literature on A.'s ontology is vast. Still outstanding among it is Joseph Owens, *The Doctrine of Being in A.'s Metaphysics*, of which the second revised edition of 1963 will be referred to here. W. Leszl's *A.'s Conception of Ontology* (1973) takes critical notice of the views of many scholars from Brentano (1862) to Happ (1971), by way of Owens himself, Jaeger, Ross, Aubenque, Berti, A. and S. Mansion, Merlan, Routila, Nogales, Décarie and others, particulars of whose writings may be found with the aid of his index, though not so easily as if there were a bibliography. (Note too that the first three entries under S. Mansion should be assigned to A. Mansion. Owens has a long review of Leszl in *JHP* 1977, 331-40.) Besides Owens (whose foreword to his 2nd ed., pp. 13-27, is particularly helpful), I would single out S. Mansion, *Le jugement d'existence chez A.* (2nd ed. 1976), and more especially her article 'La première doctrine de la substance' (*R. Phil. de Louvain* 1946). Brentano's *Von der mannigfachen Bedeutung des Seienden nach A.* (1862) appeared in an English translation (*On the Several Senses of Being in A.*) in 1975. On the nature and composition of the separate books of the *Met.* and the order in which they were intended to be read, see Owens, *Doctrine of Being*, 83-92. For theories of the chronological order of composition (Jaeger, von Arnim, Nuyens, Oggioni) *ib.* 92-104. Chung-Hwan Chen is one of those who see the conceptions of substance in the *Categories* and *Metaphysics* as irreconcilable, and explains their incomparability genetically, as representing different chronological stages of A.'s philosophical development. His article in *Phron.* 1957 contains much of value, though a different explanation will be attempted here. Since my whole approach is somewhat different from that of others, I shall not often refer to other authorities in what follows. J. H. Lesher also makes a quite different approach in *Phron.* 1971. His notes contain useful bibliographical information.

² τὸ ἐν ἑνὶ καὶ πολλοῖς. To recognize and account for the latent ambiguities of 'being' as hitherto used was in A.'s view the first essential step towards understanding the nature of being. Consequently he did not hesitate to repeat this vital sentence in several places. See *Met.* 1003a33, 1028a5, 1026a33 and cf. 992b18-19, 1064b15, 1089a7 and 16.

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contained inconsistencies, though that will only be admitted here, if at all, as a last resort. But at least this chapter hopes to show that the question itself, 'What is being?', is nothing vague or obscure, but a perfectly natural and sensible one to ask.

First, however, a word about terminology. In introducing the subject of ontology in *Met. Z* (1028 b2-4) Aristotle says that to ask 'What is it that *is*?' (*to on*) is equivalent to asking 'What is being?' (*ousia*). The first expression consists of the definite article with the neuter participle of the verb 'to be'. It thus corresponds to the article-plus-adjective phrase (the hot, the moist etc.) familiar since Presocratic times, of which it is sometimes difficult to know whether it signifies something hot or the quality heat. The grammatical form, however, does favour, as the meaning uppermost in the user's mind, 'the being', i.e. something that is (e.g. a human being). *Ousia* is the verbal noun from the same verb and so has a tendency towards *being* in the abstract, the being of the thing which is, or what it means to say that 'it is'.¹ Bonitz, however, remarked that to follow out Aristotle's uses of this word would be to expound his whole philosophy (*Index*, 544 a). Two main senses, already noticed, will be prominent as we attempt this task: (1) A primary substance, the individual man or horse of the *Categories*, subject of all predication and never itself predicated of anything else;² (2) the secondary substance of the *Categories*, essence or definable form, represented by the genus and species to which the primary substances belong.³ *Ousia* will usually be rendered here by the word 'substance'.⁴

Is there a single science of being as such? This is the first question to which Aristotle has to address himself. The separate sciences, each

¹ It is tempting to use 'existent' and 'existence' (cf. Düring, *Arist.*, 586, 597), but τὸ ὄν λέγεται πολλὰ ἄλλως, and existence is only one of the senses which it covers.

² *Catt.* 2311-14 (p. 141 above) and often elsewhere, e.g. in the *Met.* 1017 b13, 1038 b15. At 1037 a29 οὐσία is said to be 'the immanent form' (τὸ εἶδος τὸ ἐνόν).

³ *Catt.* 2314-19, p. 141 above.

⁴ It is surely close to what is understood by that term today. Cf. p. 143 n. 2 above. We are no longer in danger of confusing substances as *ousia* with the substance or substratum of Locke (A.'s ὑποκείμενον in the sense of ὕλη, matter; in the sense of subject of predication it is entirely appropriate), which would of course cause hopeless confusion. Cf. Locke, *Essay Concerning Human Understanding*, II.23.1, ed. Niddich p. 295; *Brit. Empir. Phils.*, ed. Ayer and Winch, 91f.: 'Not imagining how these simple *Ideas* can subsist by themselves, we accustom ourselves to suppose some *Substratum*, wherein they do subsist, and from which they do result; which therefore we call *Substance*.'

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with its own *archai*, dealt respectively with different kinds, or genera, of being (*An. Post.* bk 1 ch. 28), but being itself is not a genus.¹ "‘To be’ is used in many ways’, and there are no features common to everything to which it is applied, corresponding to those which unite the members of a genus. It not only covers all the categories, but appears as potential and actual, accidental and essential being, and being as truth contrasted with non-being as falsehood. The last he dismisses (*ἀφαιρέσειν*) as existing not in things but only in the mind,² and accidental being as subject to no law, having no definable cause and occurring ‘neither always nor for the most part’.³

With these exceptions, he states boldly at the beginning of *Met.* I that ‘there is a single science which surveys being as such and its essential attributes, different from all the special sciences’, which ‘cut off a part of it’ for their study. This is possible because ‘being’ belongs to a class of expressions which are neither synonymous nor merely homonymous or equivocal, but express different relationships to a common concept, radiating, as it were, from a common centre. Thus things as different as physical exercise, a beverage, colour and a man may all be called healthy, implying not that these words are synonyms but that all bear some relation to the same thing, health, whether as preserving it, producing it, symptomatic of it or possessing it. Similarly both a handbook and a knife may be called medical, not accidentally, as a mammal and a wooden implement are both called a bat, but because related to the same central concept of the healing art.⁴ The same applies to being and the verb ‘to be’ which

¹ *An. Post.* 92 b 14, *Met.* 998 b 22, 1053 b 22–24. Cf. 1024 b 9–16. It is only typical of A. that at *De an.* 412a6 he calls *οὐσία γένος τὴν τῶν ὄντων* (and cf. *Phys.* 189 a 14 ἡ δ’ οὐσία ἐν τῇ γένος), whereas at *Met.* 1028a30 it is ‘not some being but being primarily and simply’; and one can see what he means in either case.

² *Met.* 1027b 25–28a3, 1065a21–26. (On the question of reconciling the former passage with the received text of 1051b1 see Ross on the latter.) Not even possessing the idiom ‘to say what is’ for ‘to speak the truth’, we may follow his example. (Owens discusses this sense of being and not being in his ch. 15, Brentano in *On the Several Senses of Being*, ch. III. Cf. Moreau, *A. et son école*, 78, Grote, *Arist.* II, 139 n. a.)

³ *Met.* 1026b 31–33, 1065a24–25. Hence there can be no science of it (for all knowledge is of what occurs either always or for the most part, *Met.* 1065a4–5, 1027a20–21), and it is in fact *ἐγγὺς τὴν τοῦ μὴ ὄντος* (1026 b 21). Cf. *An. Post.* bk 1 ch. 30.

⁴ *Met.* 1003a34–b 10 (the example of health again at *Top.* 107b6–12), 1030b 1–3; 1061a3–7. A.’s own example of homonymy, the purely accidental coincidence of names, is *κλεις*, which meant both the key of a door and the shoulder-blade (*EN* 1129a29–31).

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has many senses,¹ but all with reference to the same starting-point. Some things are said to be because they are substances, others as affections of substance, others as representing a progress towards substance or destructions, privations, or qualities of it, as productive or generative of substance or of things relative to substance, or negations of some of these things or of substance itself. (We even say of non-being that it is non-being.) (*Met.* 1003a34-b10; cf. 1030a25-26.)

This concept, aptly named 'focal meaning' by G. E. L. Owen, 'has', as he adds, 'enabled Aristotle to convert a special science of substance into the universal science of being'.² This science is philosophy *par excellence* (elsewhere called 'first philosophy', p. 132 above), as distinguished from mathematics, physics and dialectic. Of these, mathematics abstracts and studies quantity and continuity in beings, physics studies them not *qua* beings but *qua* moving, whereas dialectic is classed negatively with sophistic as looking at attributes of things that are but not *qua* being, nor with being itself in so far as it is being (*Met.* 1061a28-b11; cf. 1005b8-11).

The existence of a single science of being *qua* being, or ontology, so triumphantly affirmed and re-affirmed in the *Metaphysics*,³ appears at first sight to be contradicted by a passage in the *Eudemian Ethics*. It occurs in a polemic against the Platonic Forms. There is no single

¹ Readers should know of Hamlyn's warning that to speak, in connexion with A., of words having senses 'is something that ought to be eschewed' (*CR* 1973, 213), though I cannot myself fully follow his reasoning. It seems to represent very well in English the meaning of expressions such as *πολλὰς λέγουσιν* (literally 'said in many ways'). Again, Long, reviewing M. C. Stokes in *Mind* 1975, 130, says, 'A. does not have a word for "sense" in the manner which S. implies', but writes rather of things being 'said' in more than one way. Long recommends using Frege's distinction between *Sinn* and *Bedeutung*. However, the difference between Greek and English idiom is such that we must frequently introduce nouns where Greek has none, and I was relieved to find a philosopher of the calibre of Ian Macintyre writing that A.'s enquiry about Being as Being was an attempt 'to isolate the unifying strand of meaning in the multifarious senses in which the word "is" can be used' (*Ency. Phil.* 1, 273, *my italics*).

² Owen, *Symp. Ar.* 1, 169, p. 142 n. 3 above. Owens discusses focal meaning on pp. 118-23 of his *Doctrine of Being*, very sensibly defending A.'s procedure in calling these expressions homonymous in the *Top.* and not homonymous in the *Met.* As A. himself observes, with his casual attitude towards verbal precision, 'It makes no difference which way you like to put it' (1030b3-4). Notice how he approximates *πρὸς ἐν τοῦ καθ' ἐν* at 1003b12-15: it belongs to a single science to study not only what is *καθ' ἐν λεγόμενον* (falls under a single concept, i.e. things in a single genus, its species or the *propria* of itself or its species; see Leszl, *Ontology*, 180) but also what is *πρὸς ἕνα φέρεται* (spoken of with reference to a single nature, having focal meaning), 'for these too are in a way spoken of *καθ' ἐν*'. For an assessment of the philosophical significance of the concept see now Hamlyn in *PAS* 1978.

³ 1003a21, b15; 1005a2-3 and 13-14; 1061b11-17.

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Form of the Good. 'Good' has as many senses as 'being'; it is found in all the categories, in substance as mind and God, in quality as justice, in quantity as moderation and so on.

'As then', he continues (1217b33), 'being is not one in the ways I have mentioned, neither is good, nor is there a single science either of being or of the good. Even good things within the same category are not the objects of a single science, e.g. opportunity (*καιρός*) and moderation (*τὸ μέτρον*). Different arts cover different kinds of opportunity and moderation: in relation to food, medicine and physical training; in relation to war, strategy.'

The analogy with good helps us to see Aristotle's meaning here. He always seeks to reduce a generality to its smallest constituents, to get as near as possible to the individual; the doctor cures not 'man' but Socrates (*Met.* 981a18, p. 187 above). It may be significant that he says only that there is no single science of being (*τὸ ὄν*), not of being *qua* being (*τὸ ὄν ἢ ὄν*). In any case he means that, as he has said elsewhere (see the beginning of *Met.* E), you cannot reduce – let us say – ornithology, botany, geology, psychology and so forth to one science with a single set of first principles on the grounds that birds, plants, minerals and life all have being in common. At *Met.* 1004b5–8 his examples are numbers, lines and fire; the single science of being studies them not in their separate natures, as numbers or fire, but simply *qua* being. This is the task of the philosopher regarded as distinct from the mathematician or physicist.

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Having satisfied himself that this question is not meaninglessly wide but the proper object of first philosophy, Aristotle proceeds to look for the answer. As we know it has two parts (pp. 132f.); the search for reality in the world of nature, and the existence and, if it exists, the character of any being existing in pure actuality unaffected by the motions and changes of our world. The first, led up to in books Γ and Ε of the *Met.*, is the main subject of book Ζ and the second of book Α. In discussing the first in this chapter, we shall find ourselves much concerned to pick our way through the inconsistencies of Aristotle's language to the basic consistency of his thought.

Substance

What does it mean to ask 'What is being?' or 'Where lies ultimate reality?' as a question applying to the whole physical universe? The point is easily missed just because it is so simple. It only means: how are we to set about answering the question 'What is it?' when confronted with any object in that universe? That is, can we find a universal rule, applicable either without exception or usually, which will ensure that we shall look for the right thing in each case, so that when we have found the answer we are looking for it will give us the essential and leave out only what is incidental?

If this still sounds vague, the various types of answer which Aristotle tests in turn make it clear that it is a plain and sensible question to ask. If philosophers and scientists have not made up their minds about it, they may easily give different kinds of answer which will be not so much contradictory as impossible to correlate at all. Suppose our question is 'What is a man?' Someone, say a physiologist of a materialistic turn of mind, replies in terms of his body – flesh, bones, sinew, blood, nerves etc.: the rest is epiphenomenal. In Aristotle's terms, he assumes that the substances or reality of the subject lies in its matter. Since, then, Aristotle's policy is to take account of everything that 'is said', every sincerely held opinion, matter becomes one claimant to the title of *ousia*, that is, to be in general terms the answer to the question 'What is it?'. Another, more interested in taxonomy, replies, 'He is an animal', so Aristotle notes as second claimant the genus; and so on.¹ No doubt all are partially right, for 'being is spoken of in many ways', but he must decide where he himself stands. So he first repeats what he said in the *Categories*, that substance is not a predicate but the subject of all predication, adding immediately, however: 'But we must not leave it at that, for it is not enough' (1029a7–9).

He begins characteristically from the commonsense point of view (ch. 2). Substance, or real existence, is thought to belong most obviously to bodies: animals and plants and their parts, the simple bodies like fire, water and earth and their products, and the heavenly bodies, sun, moon and stars. These we normally call substances,² but are we

¹ A. himself has a good example in the *De an.* (403a29–b2): 'A *dialektikos* would define anger as desire to requite injury, a physical scientist as a boiling of the blood or warm element around the heart. The one names the form and its definition, the other the matter.'

² They are given as representing the first sense of 'substance' in *Met.* (1017b10–14).

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right? According to the Platonists, for instance, not bodies but Forms and numbers are the realities.

Now the enquiry becomes more systematic. The name substance is used in four main senses, as

- (i) Essence
- (ii) Universal
- (iii) Genus¹
- (iv) Substratum or subject, which itself covers three things:
 - (a) matter, (b) form, (c) their product, the concrete object.²

As the enquiry proceeds, it becomes clear that this loose, *prima facie* classification needs tidying up. 'Substratum' is ambiguous, essence and form are identical (see e.g. 1032b1-2), genus is only an example of a universal. The genuine claimants are:³

- (i) Matter
- (ii) The concrete physical object as a whole
- (iii) The universal
- (iv) Essence

and the successful candidate must be

- (a) the subject of all predication
- (b) a separately existing individual.⁴

(i) *Matter*. The claim of matter (defined for this purpose at 1029a

¹ Cf. *Top.* 102a34-35: 'It is a suitable answer to the question "What is man?" to say "He is an animal".'

² Matter is substratum of form, the concrete individual of its attribution (*ὑποκείμενον*, as we have noted earlier, means both substratum and *subject* of predicates). Cf. ch. 13, 1038b4-6: 'the substratum underlies in two ways, either because it is an individual, as an animal underlies its attributes, or as matter underlies the actuality.' The inclusion of form as substratum in the present passage is unusual, and Bonitz (*Metaphysica*, p. 346) suspected it was a slip due to the constant association in A.'s mind of matter, form and the product of the two. It could, however, be said to be in a truer sense than the compound that underlies properties and accidents: it is the subject of all attributes not included in the definition of a species, e.g. toolmaking of man. Anyway its inclusion under substratum recurs in book H, 1042a28-29.

³ This becomes clear at 1038b2ff.

⁴ For (a) see *Met.* 1017b13-14, 1029a8-9, 1038b15 and further ref. given by Mansion, *R. Phil. de Louvain* 1946, 355 nn. 12-14; for (b), *Met.* 1029a27-28, 1070b36. These are the main requirements. Owens (*Doctrine of Being*, 318) lists the characteristics of *ousia* in Z ch. 1 as (1) a 'what-is', (2) a 'this', (3) primary, 'in the sense that through it all other things are expressed as being', (4) self-subsistent (*καθ' αὐτό μετ'ἑκτό*, 1028a23), (5) separate, (6) a substrate, and (7) definite (*ὁρισμένον*, 1028a27).

Substance

20-21 as 'what in itself is neither something nor a quantity nor belongs to any other of the categories by which being is determined') is at first sight strong, for it is what is left if all else is taken away (1029a11-12). From this point of view, matter would be substance, but it fails on the second test: it lacks separateness and individuality (lines 27-28). We are looking for something that can be the object of a science, and as he says later (1036a8-9), matter is by its nature unknowable. This does not prevent our philosopher, with his incorrigibly one-track-at-a-time mind, from saying in the next book (1042a32): 'That matter too is substance is obvious',¹ on the grounds that it underlies and persists through every sort of change. He goes on to explain, however, that it is substance potentially, not actually,² and merely potential substance is not, of course, what he is looking for in *Z.* The true position is explained more fully in *Phys.* 1 ch. 9, by the distinction between accidental and essential non-being. The substratum (matter, *hylē*) is only 'accidentally not', because possessed (possibly temporarily) by the privation (*sterēsis*) of a form. 'We maintain that matter and privation are different things, of which one, the matter, is accidentally non-being, but privation essentially. Matter is near to substance - in a sense *is* substance - but privation definitely not' (192a3-6).

(ii) *The individual concrete object.* We saw how, in the *Categories*, pride of place as substance in the fullest and strictest sense was given to the individual, separately-existing object, perceived by the senses: a particular man, a particular horse. This is repeated in *The Generation of Animals* (unlikely to be an early work) at 767b32 and 768a1; both genus and individual are sources of generation, 'but more truly the individual, for that is substance . . . and by individuals I mean Coriscus or Socrates'. *Met.* A provides a particularly striking passage (1071a17-22). We may speak of *archai* in universal terms, 'but these universals have no being (*οὐκ ἔστιν*); each individual cause has its individual effect. In general man begets man, but there is no such "man". What it means is that Peleus beget Achilles and your father you.' Such

¹ Thus it is not quite true to say with Charlton (*Phys.* 1 and 2, 142) that the Stoics could have found in A. 'no trace' of the doctrine that prime matter is *ousia*. They had only to quote this sentence.

² *Met.* 1042a27-28, b9-11. For matter as substratum of change, and as potentiality, see pp. 122-3 above.

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are the beings which common sense declares to exist truly and fully, and it was as the apostle of common sense that Aristotle left the philosophical camp of his master. Plato had not played fair by the rich variety of things in the natural world. Professing to explain them, he had in fact robbed them of most of their reality and transferred it to some super-realities of his own invention. Men became mere shadows of the *autoanthropos* (Aristotle's word, e.g. 1040 b 33), who existed apart on some higher plane. To Aristotle he was a figment of the imagination, and his invention only served to degrade the realities around us.

The need for explanation remained. In Aristotle's eyes, as we have seen, the philosopher's task is to explain reality. The primary substances of the *Categories* crowd immediately upon our senses in a confusion that is far from self-explanatory. *They constitute in fact the data from which we start, the reality demanding explanation*, and that is why they cannot be called substance in the present philosophical context. What is here sought is *their* substance, that *in each of them* which alone can give a scientific answer to the question 'What is it?'. No definition or account of individuals is possible.

1036a5-8. There is no definition of individuals; they are recognized intuitively and through sensation, and apart from the actual experience it is not clear whether they are or not. But they are always spoken of and known by the universal formula. (Cf. 1040a2-4, *De an.* 417b22-23.)

With this goes ch. 15, 1039b27-31:

Therefore there is neither definition nor demonstration of perceptible individual substances, because they have matter whose nature is such that it may either be or not be; wherefore all individuals are perishable.¹

At 1029a30-32 the claim of the concrete object to be a substance in its own right was briefly rejected on the grounds that it is 'posterior and obvious'. Form is logically prior because the concrete object can be

¹ One of the reasons why A. considers the Platonic Forms incapable of explaining the things of this world is that 'they are not the substance of these things. Otherwise they would have been in them' (*Met.* 991a12-13). Cf. p. 215 n. 3 below.

² There are exceptions. The unknowability, scientifically speaking, of individuals is due to their matter. Therefore God, who is without matter, and the heavenly bodies which, though perceptible, are everlasting and unalterable, having a matter (*ύλη*) subject only to perfect circular motion, are proper objects of philosophical study, as we shall see.

analysed into it and matter. As he says later, 'substance is the immanent form, from which together with the matter the concrete substance is so called' (1037a29-30). From this aspect individuals appear as substances in a derivative way, because they contain the definable form.¹ This is in complete accord with the description in *An. Post.* of how knowledge advances from its roots in sensation to its fruition in grasp of the form (pp. 181f. above). To Plato and Aristotle being or reality was above all something that could be known, of which one could 'give an account'. They did not argue the point. Without that faith philosophy would be a pointless occupation, whereas for both it was the most worth-while occupation in life, the highest expression of human nature. 'All men by nature desire to know.'² It followed that what are now called separate branches of philosophy, namely ontology and epistemology, are in Aristotle inextricably blended.

Before going further, we should remind ourselves that Aristotle treats 'substance' (*ousia*) as a relative term; something can be 'more' or 'less' substance than something else. Thus in the *Categories* (2b7-8) species were 'more substance' than genera because nearer to the individual (p. 142 n. 1 above). In *Met. Z* (1029a5) form is said to be 'more being' than matter and, 'by the same reasoning', than the compound of the two. So he can say in *A* (1070a9-12) that there are three types of substance, matter, form and the individual, without thereby putting them on the same level.³ Nor should we forget, if we find him in difficulties, that he is now facing what he himself called 'the most intractable of all problems as well as the one most needing attention'; 'If nothing exists except individuals, and individuals are infinite,⁴ how

¹ 1037a29-30. Cf. 1039b20-22: 'The concrete object and its definition (*logos*) are different kinds of substance. I mean that the one is substance in the sense of the *logos* combined with matter, the other as *logos* pure and simple.' In the *Cat.* of course the form depended for its substantiality on the existence of the individuals in which it inhered (pp. 141ff. above).

² First sentence of the *Met.* Cf. *EN* to ch. 7, which explains why the highest human happiness consists in 'the activity of the mind in pure thought, aiming at no ulterior end and possessing its own proper pleasure' (pp. 390ff. below).

³ A.'s indifference to the effect of his language never ceases to shock. Even *τὸς τι*, his favourite expression for a physical unit or individual (p. 140 n. 4), can be applied in this comparative way to (of all things) *ὅλη*. It is *τὸς τι μᾶλλον* when contrasted with *στίλβουσιν* (*Phys.* 190h23-28). When he chooses to speak more precisely it is *ποσὶς τι* (p. 210). At *De an.* 412a7 he says there are three kinds of *οὐσία*: 'matter, which by itself is not a particular "this", shape or form, in virtue of which it is called "this", and thirdly the product of the two'.

⁴ *ἀόριστον* cannot be covered by any single English word. It means both 'infinite' (in number or extent) and 'indefinite', 'indefinable' (incapable of *ἀρίστος*).

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can one attain knowledge of the infinite? We know things in so far as they are one and the same and possess some universal attribute' (*Met.* 999a24-29). The problem is perennial, but was especially acute for Aristotle with his reaction in favour of the individual against Platonic Forms.

It should no longer be surprising to find Aristotle's answer what it ultimately is, namely that, speaking philosophically, substance is form or essence (that which is expressed in the definition); but there remain one or two outstanding difficulties connected with this and other claimants.

(iii) *The universal.*

It would appear impossible that anything spoken of universally should be substance. In the first place, the substance of anything is peculiar to it and belongs to nothing else, whereas the universal is common: it is what belongs to many that is called universal. From this standpoint it is clear that no universal attribute is a substance, and that no common predicate signifies a 'this', but only a 'such'.

That the universal cannot be a substance or a 'this' is repeated many times¹ and argued throughout chapters 13 and 14 of *Met. Z.* Ch. 14 makes clear that it is directly aimed at the Platonic doctrine of Forms, which elevated genera and qualities to the status of independently-existing substances, and moreover affirmed that the more general they are, the higher is their place in the scale of reality.

It may be pertinently asked: Is not the Aristotelian form or essence (*εἶδος*, *τί ἦν εἶναι*, 'what it is to be' so-and-so), which in the *Metaphysics* is equated with substance in the strictest sense, just such a universal? It gets no nearer to the individual than a statement or precise description of its species.² This brings us to the heart of the scientific dilemma as Aristotle expressed it in *Met. B*, which he repeats in different words here in *Z*.

¹ E.g. *Met. Z.* 1038b8-12 and 1039a2 (quoted, or paraphrased above), 1041a3-5, B 1003a7-9, I 1053b16-17, M 1087a2, SE 179a8-10.

² In the *PA* (639a16), with reference to alternative zoological methods, the emphatic phrase 'each single substance' refers to separate *species*, exemplified by lion, man and ox. For Owens's subtle conclusion that form is neither singular nor universal, but prior to both, see his *Doctrine of Being*, 242-5, 247f.

Substance

1039 a 14. If no substance can consist of universals because they signify a 'such', not a 'this', nor can any concrete substance (οὐσία σύνθετος) be composed in actuality of substances, every substance would be simple, with the consequence that there would be no definition of any substance. But everyone believes, and it has been stated earlier, that it is only, or primarily, substance which can be defined.

Science, he felt, should be able to explain individuals – this horse, this tree – but it is just these which elude definition and can only be studied in their classes, 'spoken of and known through the universal *logos*'.¹ Yet nothing common to many things is substance.²

Doubtless he did not succeed (for no one has) in solving once for all the problem of the nature of our knowledge of individuals, but at least three points may be made in defence of his attitude.

(a) The first has already been noted, namely that the object of his search in *Met. Z* is comprehensible substance, the object of scientific thought. It is what in the *Categories* he called secondary substance, and he still believes in the factual primacy of the individual, although for scientific purposes it has to be reckoned 'logically posterior' (λόγῳ ὑστέρον), second in the order of reason or comprehensibility.³

(b) He holds that the nearer science can get to defining the individual, the fuller is the reality which it is describing. Species is substance rather than genus, and the researcher must not rest until he is sure that the *ousia* which he finally reveals is that of the smallest definable group,⁴ nearest to the 'primary substance' of the *Categories*. The genus either is not a 'being' at all apart from its species, or serves only as their matter,

¹ 1036a6-7; also b 34, the *lógos* is of the universal.

² 1040b23. But note what follows: 'for substance belongs to nothing but itself and that which possesses it, of which it is the substance'. Evidently 'substance' refers to essence rather than to the concrete individual.

³ As his Fellowship dissertation at Trinity College Cambridge, H. McL. Innes offered a useful discussion of 'The Universal and Particular in A.'s Theory of Knowledge' (published in Cambridge in 1886). I quote a remark from p. 12 of this work.

⁴ 'The particular thing is an *ἐξ ὁμοίων οὐσία* ἐκ τῆς ὅλης καὶ τῆς μερῆς and as such although it may be adequate for the purposes of the *Categories* it is posterior to the *ἀρχαί* (*εἶδος* and *ὅλη*) and therefore less an *οὐσία* compared with them. In this statement is implied a new criterion of *οὐσία*, that of logical priority, which really underlies the original one; for the particular though not logically prior to its *ἀρχαί* is prior, as subject, to the *συμβεβηκότα* which are predicated of it.'

⁵ The *τεχάτων* *εἶδος*, called *οὐσία* at *PA* 644a25. For another view on this subject, see R. D. Sykes, 'Form in A.: Universal or Particular?', *Philosophy*, 1975, 311-31.

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the undefined and potential.¹ The tension here between Aristotle and Plato is noteworthy. In general, Plato taught that the more all-inclusive a Form, the higher was its place in the scale of being. It contains, and is enriched by, the Forms of its subordinate genera and their species. This is the contrary of Aristotle's view, in which the higher genus lacks the differentiae which are added to form the lower genera and their species. Yet when we look at Plato's later method of definition by *diairesis*, especially in the *Philebus*, we find ideas much closer to Aristotle's, which were probably much in their debt.²

(c) Although he now transfers to essence or form some of the terms elsewhere applied to individuals, he does not claim that *ousia* in the sense of *eidos* exists by itself like the Forms of Plato. It is the substantial element *in* things,³ discovered by an analysis of the things in which it must always inhere. This raises the question whether by his final decision Aristotle has not denied to substance the second of the criteria which even in the present discussion he insists that it must have, namely separate existence. We shall return to this after some further examination of this last, successful competitor for the title.

(iv) *Essence*. Substance, he finally decides, is just *the form or essence of a thing*, the subject of its definition by genus and differentiae.⁴ Its case is argued in ch. 4, where he writes with characteristic terseness; 'The essence is just what a particular thing is.' That being so, knowledge of it gives us knowledge of that of which it is the essence.⁵ In *The Parts of Animals* he writes (644a24); 'The *infima species* are substances, and by them are defined the formally indistinguishable individuals, like Socrates and Coriscus.' The differences which we perceive between

¹ 1038a5-6. Cf. Δ 1023b1-2: The concrete substance comes from sensible matter, and the form (*eidos*) likewise comes from 'the matter of the form'.

² In spite of his criticisms of it (*An. Pr.* 1.31, *An. Post.* 2 ch. 5, *PA* 1 ch. 2). Cf. Kneale, *D. of L.*, 67: 'It seems very probable that the way in which he presented his theory was determined by reflection on Plato's method of division.' For Plato see especially *Phil.* 16e-17a (vol. IV, 208-10), and Allan, introduction to Stenzel's *PMD*, 32ff.

³ τὸ εἶδος τὸ ἐνόν, οὐσία ἐκείνου (1037a29, 1032b2). There is a separately existing substance in the sense of form without matter, namely godhead; but that is not the form of anything, as were the Platonic Forms.

⁴ 1030a6. 'Form or essence': these are two names for the same thing (p. 213 above).

⁵ 1030a3 (ἀπερ γὰρ τί ἐστι τὸ τί ἦν εἶναι) and 1031b6-7. This is essence or substance (*οὐσία*) as Socrates saw it, and Plato when he was in Socratic vein. Cf. especially *Crit.* 386d-e, 423e (vol. IV, 19).

individuals (the tallness of John, the bad temper of James) are 'accidental', i.e. they obey no rule, occur 'neither always nor for the most part', and so are beyond the confines of scientific knowledge. In this context, hardly surprisingly, specific form, the essence of individuals (or as he would say, the individuals themselves shorn only of matter, the element of imperfection, the indefinite and unknowable) is endowed in the *Metaphysics* with the titles reserved in the *Categories* and elsewhere for the true individuals – Socrates, Coriscus, *this* horse. As he puts it in *Met. Δ* (1017b23–26), "Substance" has two meanings; (i) the final subject, which is not predicated of anything else; and (ii) that which is individual and separable, and such is the shape or form of each thing.¹ The title of 'a particular "this" (τόδε τι)', elsewhere jealously reserved for the concrete object, is now transferred from the empirical to the scientific or philosophical unit, the specific form,² which as essence usurps also the title of 'primary being'.³ It is not so much that the perceptible substance has yielded first place to its form. Rather, as he says in this book, the form *is* the individual; and we can sympathize with his change of viewpoint when we remember that his present aim is to discover how far the individual can come within the purview of the philosopher or scientist. In ch. 11 he asks which parts of anything are parts of the form and which belong to the matter. As examples of matter he mentions the wood or bronze from which circles (discs or wheels) are made, then adds (1037a24–28); 'In the account of the substance the material parts will not appear, for they are not parts of that kind of substance but of the concrete whole, and of that in a sense there both is and is not a definition. Taken with the matter it has none, for that is indefinite, but judged by its primary substance it has one.' 'Essence is substance without matter' (1032b14).

¹ *Met.* 1017b25–26, 1049a35 (it might be safer to omit some of the other reff. in Bonitz, *Index*, 496a1–2), and at *PA* 644a30 he calls what is ὅτιον τῷ εἶδει α καὶ ἔκαστον. Cf. the remarks about form as actuality on pp. 124f. above. At the same time this astonishing man can identify εἶδος as subject of definition with τὸ καθόλου! (1036a28–29.) Seen in one light it is individual, in another universal.

² This is defined at 1037b3–4, not very lucidly, as 'a substance not in the sense of being something in something else which underlies it as matter'. 'In matter' is just what the Aristotelian form (as opposed to the Platonic) is, so far as it puts its stamp on everything in the physical world. However, his immediate purpose is to distinguish purely formal attributes like curvature from those which imply their realization in a particular kind of matter, as snubness must qualify the flesh of the nose.

The question: What is being?

Having decided that it is essence that may be called substance in the truest and fullest sense, Aristotle 'makes a fresh start' and endeavours, in the last chapters of *Met. Z* and the early chapters of *Met. H*, to make his meaning clearer and more precise. He begins by repeating what he laid down in his work on scientific method:¹ scientific knowledge is knowledge of causes, and the question what a thing is is only properly answered by saying *why* it is. Definition, if it is not to be merely 'nominal', answers the questions 'Why?', e.g. the answer to the question 'What is thunder?' must tell why it thunders. If then essence is what is expressed by the real definition of a thing, it must not be only what a thing is ($\tau\acute{\iota}\ \epsilon\sigma\tau\iota$) but the principle in virtue of which it is, its real cause.

His next step is to say that there is no point in asking 'Why is a thing itself?', e.g. 'Why is a house a house?'. The sensible question is not 'Why is A A?' but 'Why is A B?', i.e. 'Why has this matter this particular form?' Why, then, do we call these particular bricks a house and not just a pile of bricks? Because they exhibit the essence of a house, 'what it is to be a house'.² This must not be thought of as another element alongside the material elements, nor any compound of them,³ for that would lead to infinite regress. Now to say that a house is a house by reason of the presence of the essence of a house is doubtless correct, but in this abstract form scarcely informative. Aristotle himself shows that it must not only be expressed thus abstractly, but also concretely, when it appears as not only the formal cause or essence but also the final. The reason why these materials are a house, we say, is that they exhibit the form of house. Put concretely, it might be supposed to be that they are arranged in the form of four walls and a roof; but that is not the true explanation of their being what they now are, and therefore does not fully express the essence. The true reason is that they are so arranged as to give shelter to man and his possessions, from destruction by winds, rain and heat.

¹ Pp. 172f., 176 with n. 1.

² 1045b 5-6, a gem of Aristotelian style: $\alpha\lambda\iota\alpha\ \tau\alpha\delta\acute{\iota}\ \delta\iota\alpha\ \tau\acute{\iota};\ \delta\tau\iota\ \sigma\upsilon\mu\alpha\rho\chi\epsilon\iota\ \delta\ \eta\nu\ \alpha\lambda\iota\alpha\ \epsilon\iota\mu\alpha\iota$.

³ The same question was discussed by Plato in the *Theaetetus*. Cf. 203e: 'Perhaps we ought to have supposed that the syllable is not the letters but a single form that arises out of them, different from the letters and with its own single character.' See Cornford's comments on the argument, *PTK*, 151.

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1043a14-19. (Cf. *De an.* 403b4-5.) In defining a house, those who say 'stones, bricks and timber' describe what is potentially a house, for these are its material, whereas those who call it a receptacle and shelter for bodies and goods, or add similar features, describe the actuality.¹ Those who combine the two give the third kind of substance, the compound of matter and form.²

The example here is an artefact, but the same is true of the products of nature. The reason why this flesh etc. is a man, and neither a lump of dead meat nor one of the lower animals, is in general terms that there is present in it the form of man, i.e. the human soul; but properly explicated the reason is that it is so organized as to be able to perform the proper and peculiar function (*ergon*) of man, i.e. is capable of rational and moral activity (*EN* 1097a30-b3).

So the doctrine of substance culminates in a reiteration of Aristotle's unswerving adherence to teleology in nature as in art. To define something one must know its essence, and to know its essence is to know its *ergon*, what it is for. Once more we see the parallelism of the two scales, matter-form and potentiality-actuality. Aristotle's commonest word for actuality or the complete realization of form is not *eidos* but *energeia*, the normal Greek for 'activity'. When he speaks generally of matter and form as opposites, rather than paying attention to the degrees of progress from one to the other, he uses the word *hexis* - 'state' - to differentiate unordered from informed matter, e.g. when a house is completed he would say it has reached the 'state to which' (ἐξίς εἰς ἧν, *Met.* 1070a12), the opposite of the pile of bricks with which the builders started. But strictly speaking this is one stage below the highest. The house has not fully realized its form until it fulfils its final cause, by being occupied and actually giving shelter to human beings, performing its proper activity. Ethics provides another illustration. Virtue is a

¹ Equated with form, as two lines below, again at 1043a30-31, 1043b1-2 and elsewhere.

² The addition of the concrete object may seem unfortunate, for A. is speaking of definition, and concrete objects, we have often been told, are incapable of definition. In the next chapter, however (1043a29), he manages to include the materials in a specific, not individual statement: 'One cannot always tell whether the name denotes the concrete substance or the actuality and form, e.g. whether "house" is a sign for the combination "shelter made of bricks and stones in a certain arrangement" or for the actuality or form, "a shelter".' 'What is ὅλη relative to the house has of course its own form and essence as bricks or wood. The unidirection of his language may annoy, but on the other hand its flexibility makes it a wonderful instrument compared to the resources of his predecessors including Plato. *Aporiai* that baffled them dissolve and vanish in the face of his 'in one sense . . . but in another'.

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hexis, but the *ergon* of man is not simply the possession of virtue, but activity in accordance with it. A man might be endowed with all the virtues but sleep or do nothing his whole life through.¹

There remains the requirement of separate existence. Two kinds of being in particular, we remember,² are to be recognized as substantial, the individual (subject of all predication) and its form alone, but the qualities of individuality and separateness have apparently been transferred from the physical object, to which they belonged in the *Categories*, to the specific form. It is of course still true that for Aristotle the formally indistinguishable single specimens of natural or artificial kinds are the real things of the world, and the reality of the form goes with its power to explain them. Forms in the sublunary world exist only in matter, but the compounds of the two – frolicking dogs, growing trees, rational men, solid houses – lead a literally separate and independent existence. Yet here in the *Metaphysics* too, where essence becomes primary substance, the requirement is maintained, and in ch. 6 he argues that a thing and its essence are the same, the essence being the substance of the thing. We cannot get out of it that way. Lack of separability, after all, was the main reason for rejecting the claim of matter to be substance. In what way does essence possess it?

It does so by being 'conceptually separate', separate in thought or by definition.³ The difference is brought out at *Met. H* 1042a26–31: The substratum is substance, i.e. in one sense matter, potentially but not actually a 'this', in another the *logos* or form, which as a 'this' can be separated conceptually, and thirdly the product of the two, which alone undergoes generation and perishing, and is separate without qualification.⁴

The difference is real. As essence is substance understood as the object of scientific knowledge, so it counts as separate⁵ because, being

¹ *EN* 1098a16, 1095b32. The sleep might be pathological and inescapable, but it is hard to see how a lifetime of idleness is compatible with virtue! However, the contrast between *εἶς* and *ἐνέργεια* is vividly brought out.

² *Met.* 1017b23–26, p. 216 above.

³ *χωριστὸν λόγῳ*, again that maid-of-all-work among Greek words. Owens (*Doctrine of Being*, 381) denies that it means 'in thought', and says it means 'separate in form', but ends by translating it 'in notion'. 'Can be separately formulated', Ross.

⁴ *χωριστὸν ἀπλῶς*. In the *Physics* the separability of form is expressed more negatively: it is *not* *χωριστὸν* except through the *λόγος*. See 193b3–8.

⁵ Or separable. It is a minor nuisance that *χωριστὸν*, like other words with the same termination, may in appropriate contexts be used to mean either. As A. himself says of *διαιρετὸν* at *De an.* 430b6, they may signify either the potentiality or the act.

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intelligible and definable, it can be abstracted mentally and thought of by itself. Subspecific matter is to the scientist something featureless and indistinct, in no sense capable of separation from that of which it is the matter. It is the element of imperfection both in the being of an individual and in our knowledge of it: of the first, because whatever has matter retains a residue of potentiality, and of the second, because without form it eludes definition. It is what is left over when we have abstracted from individual specimens the *eidos* which is shared by all members of the same species.

Finally, to look forward once again to the supreme manifestation of being and the only pure substance (which we cannot consider fully until some more threads are in our hands), it follows that God, being entirely free from matter, is both specifically and numerically one, perfect in being (actuality)¹ and perfectly knowable. This, as we now know, does not mean easily or immediately knowable. 'From what is poorly known but known to oneself one must try to understand what is absolutely knowable, passing, as has been said, by way of just those things that one understands.'² And so the understanding of the divine, equated with pure actuality and what is most knowable in its own nature, is the final goal of first philosophy, though if its results are to be true and firmly based, it must first immerse itself in the facts of the physical world. The two divisions which we have observed in the study of being *qua* being (pp. 132f., 207) are neither separate nor mutually exclusive. The search for form or essence in our own imperfect world is the first stage of the philosopher's pilgrimage, which, if he is persevering and argues on sound Aristotelian principles, will bring him in the end face to face with God – such a god, at least, as Aristotle allows him.

Summary and appraisal of the substance-doctrine

If Aristotle is asked as a first question; 'When you speak of substance, to what do you refer?', he wants to be able to reply; 'Individual concrete, physical objects'. In *Met. Z* he tries to answer a second question.

¹ *Met.* 1074a35–37: τὸ δὲ τί ᾗν εἶναι οὐχ ἔχει ὅλην τὸ πρῶτον ἐντελέχεια γάρ. ἐν ᾧ καὶ λόγῳ καὶ ἀριθμῷ τὸ πρῶτον κινεῖται ἀκίνητον δὲ.

² See the quotations on pp. 198f. above.

Summary and appraisal

Individual concrete objects in the sublunary world, as candidates for the name of substance, are open to the old objection that they are undergoing a continual flux of birth and decay and change in general. It was for this reason that Plato had denied them the name of 'beings' (ὄντα) and taught that they should only be described as 'becomings' (γινόμενα). What is the stable element in them, which may be called their substance (ἡ ἐκάστου οὐσία), by virtue of which we can apply to them the word 'are' – not merely 'become' – and answer the question *what* they are? Unless we assume that it is this, which in the *Categories* he called secondary substance, that he is seeking in *Met. Z*, much of the book becomes nonsense. But he certainly gives the impression that he is now regarding it as substance in no merely secondary sense. Hence Ross's remark (which many agree with) is *prima facie* plausible (*Metaph.* 1, cī); 'the general tendency of ZH is to carry Aristotle away from his earlier doctrine that the sensible individual is "primary substance", to one which identifies primary substance with pure form and with that alone'.

But what I hope has been shown here is that this is a natural and reasonable transition, not a mere confusion of thought or even a change of mind. There are the two separate questions; 'What do you refer to by the term "substance"?' and 'By what right do you do so?'. Aristotle's answer to the first – 'Substances for me are individual things, including what I can see and handle' – was conditioned by his temperament. His answer to the second was influenced by the undoubted truth, revealed by previous philosophers, that concrete sensible individuals cannot as they stand be the objects of scientific or philosophic enquiry. He might indeed have attempted another solution. Materialism was not dead – it is not dead yet – and his insistence that reality must first be sought in sensible objects, and his aversion from the Platonic theory of Forms, might suggest that he was temperamentally inclined to it. In fact, however, he was not, and here the psychological aspect comes in to help our appreciation of his difficulties. They are the difficulties of a Platonist who cannot bring himself to believe that universal forms, specific or generic, exist as transcendent entities, but who yet *is* a Platonist and fascinated by the doctrine of immaterial form as the truest reality.

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It has to be emphasized that for Aristotle the separation of the form or essence is a mental feat, not the reflection of a separation which takes place in nature. But this does not mean that form or essence is itself only a logical abstraction which has no *existence* in nature. The specific form, the essence of the individual, is a changeless, non-material entity which exists, but exists only in the manifestations of nature, i.e. in conjunction with matter, not in a transcendental world.

Doubtless this is not a satisfactory explanation of reality. For one thing it makes Darwinian evolution impossible. Yet it lasted a long time, and in the eighteenth century Linnaeus could still write: 'There are just as many species as there were created in the beginning. There is no such thing as a new species.'¹ Like all philosophies (pp. 89f. above), Aristotle's embodied the effect on a particular intellectual temperament of a combination of experience with the previous history of thought. It represents the position he was trying to hold as a result, on the one hand, of renunciation of the Platonic Forms as failing to satisfy his empirical demands, and on the other of a determination to defend to the last ditch the Platonic doctrine of a stable, knowable and hence immaterial reality against all attacks of flowing philosophers or other sceptics.

¹ Quoted by Singer, *Hist. of Sc. Ideas*, 379f.

XII

CAUSES

(1) THE FOUR CAUSES

The word in Aristotle regularly translated 'cause' is *aition* or *aitia* (or occasionally *archē*, on which see p. 178 n. 2.) The adjectival form *aiti-os*, -a, -on meant 'responsible for', especially in a bad sense of persons, 'to blame' or 'guilty'. Typical of this standard use is the famous pronouncement of the divine spokesman in Plato's *Republic* about the soul's choice of a future earthly life (617e): 'The responsibility (*aitia*) is the chooser's; God is guiltless' (*an-aitios*). The meaning 'cause' was already established before Aristotle, as when Herodotus at the beginning of his history promises to investigate the *aitia* of the war between Greeks and Persians. Aristotle uses it in his philosophy to include all the factors which must be present for anything to come into being, whether naturally or artificially. It thus covers a wider field than our 'cause', which, however, will be retained here as the nearest English equivalent.¹ These necessary factors are of four kinds, material, formal, efficient (or motive), and final,² which he enumerates and describes a number of times in different phraseology; and he insists that a scientific explanation of any natural product or event (e.g. a man) demands a statement of all four (*Met.* 1044a33-b1). We have met

¹ Vlastos in *Plato* 1 (ed. Vlastos), 134-7, protests vigorously against the translation 'cause', but it is difficult to find a better word. Cf. my vol. IV, 351. A. Gotthelf in *R. of Metaph.* (1976-7), 227 n. 1, is also unconvinced by V.'s reasons for abandoning the traditional translation. Owens (*Doctrine of Being*, 82) went so far as to say 'the English word "cause" renders the notion quite correctly'; and on p. 348: 'The fundamental notion of "being responsible for" may be expected to be present in every instance of its usage, even though the instances will be equivocal in the Aristotelian sense.' Düring like Vlastos, complains that when we render *aition* by 'cause', 'we unconsciously assume that behind the word stands our own thought about causality'. He would substitute 'the structure of things' (pp. 94f., 98f., 225, 517), but the one essential feature of an *aition* which must in no context be dropped is its *responsibility* for an entity or state of affairs. Düring himself therefore has sometimes to translate it by 'Grund', which he does without comment; e.g. on p. 597 τῶν πρώτων αἰτίων (1003a31) becomes 'die letzten Gründe'. Sometimes, it is true, 'reason' would be more suitable than 'cause'; cf. Le Blond, *Logique et méthode*, 93f.

² Τῆν ἄληθεϊαν, τὸ εἶδος, τὸ κίνησθαι, τὸ οὐ ἔμμεναι, *Phys.* 198a23-24. For the different expressions used for each see Bonitz, *Index* 22b 29-39.

them all in one context or another, but rather casually, and the present chapter will be devoted to filling gaps in the account of separate causes and of their relations with each other.

Physics 2, ch. 3, begins by repeating that the aim of the investigation is an understanding of individual things and events,¹ and that we can only claim to know them when we understand the cause (literally here 'the why') of each, a reminder of the difference between nominal and real definition.² It continues;³

In one sense, then, (1) 'cause' (*aitia*) means that out of which a thing comes to be and which persists in it, e.g. the bronze of a statue or the silver of a bowl, and the genera of these. (2) In a second sense it is the form or pattern, i.e. the formula⁴ of the essence and its genera (e.g. of the octave, the ratio 2:1 and in general number), and the parts contained in the definition. (3) Again, it is the primary source of a change or state of rest, e.g. the adviser is the cause of an action, a father of his child,⁵ and in general the maker or changer of what is made or changed. (4) Lastly it means the end, what the thing is for, as health is the cause of walking. If asked 'Why does the man walk?', we reply 'for his health', and with that reply consider ourselves to have given the cause. As effects we also include the intermediate stages externally caused, e.g. in the case of health slimming, purging, drugs or instruments.

¹ Note the repeated *ἑκαστον*, 194 b 18 and 23. 'Things and events'; cf. 'the adviser' as efficient cause. As a Greek, A. was excused from supplying any noun after *ἑκαστον*.

² See pp. 172f., 176 with n. 1, 217. The difference is between *λόγος νοματικός* and *λόγος ὁ δηλῶν διὰ τί ἐστιν* (*An. Post.* 93 b 30-31, 38-9).

³ 194 b 23-195 a 1, a duplicate of *Met.* 1013 a 24-b 2. Commentators have disputed whether *τὴν πρώτην αἰτίαν*, with which *τὸ διὰ τί* is equated at 194 b 20, is the proximate or the ultimate cause. Surely neither, but rather what is called both *ἀρχότερον* and *πρότερον* at 195 b 21-25, i.e. the cause in the strictest and most relevant sense. The efficient cause of a house is a man, but only *qua* builder, i.e. as possessing the craft of building, which is therefore the 'prime' cause. So too *πρότερος* καὶ *ὑστέριος* of physician and expert at 195 a 30.

⁴ It might be thought that strictly speaking the formal cause is the *τί ἦν εἶναι* itself, of which the *λόγος* is the expression in words or thought. Just possibly the seeming looseness may be due to A.'s use of examples from artificial generation. The *εἶδος* of a lyre is the existing ratio between the lengths of its strings; but before these ever came to be cut and stretched in their positions, there had to exist the *λόγος* of that *εἶδος* in the maker's mind to serve as a *παρόδειγμα*. But *λόγος* has so many meanings (including 'ratio') that the whole phrase is more probably only a circumlocution for *τί ἦν εἶναι* or *εἶδος*. Cf. *GC* 335 b 6-7, *Met.* 1069 b 34.

⁵ A. and his contemporaries believed that in generation the mother provided only the matter (the menstrual fluid) and that the father's semen was the activating element or motive cause. See *GA* 727 b 31-33, 729 a 28-31, *Met.* 1044 a 34-36. This according to Needham (*Hist. of Embryology*, 43) 'was not an illegitimate deduction from the facts before him'.

The Four Causes

More briefly in the *Metaphysics*:¹

Causes are spoken of in four senses: (1) the substance or essence . . . , (2) the underlying matter, (3) the source of the motion, (4) the opposite of this, the good result aimed at, which is the end and aim of all coming-to-be and motion. These we have investigated sufficiently in the *Physics*.

In the *Physics* Aristotle calls the form the pattern or model (*paradeigma*), and Ross notes this as a relic of Platonic language. Nevertheless *eidos* always retained for him the sense of external pattern as well as internal form without either Platonism or self-contradiction, in spite of his denial of transcendent paradigmatic Forms. A man has human form, and that is one of the four *aitia* of his existence. Another, equally necessary, is the efficient cause or agent, namely his father. But the father must be of the same species (*eidos*); only through possessing the form (*eidos*) which the offspring will finally attain, the pattern according to which he will develop, can the father act as the agent of birth. Two points here are important for Aristotle's philosophy.

(i) For anything to come to be, there must already exist a perfect example² to be its cause. In Aristotelian terms, act is prior to potency both logically and chronologically. This conviction was one thing which closed his eyes to any idea of the evolution of species.

(ii) Formal and efficient (or motive) causes, whether of natural or artificial creation, are united in the same individual. The efficient cause of an animal is an animal, i.e. a being possessed of the form to be realized in the offspring, the actuality to its potentiality. That of a house is the builder, but he can only be so in virtue of having the form (design) of the house already present in his mind (or even externalized in the shape of plans and drawings). 'The products of art are things the form of which is in the mind of the maker' (*Met.* 1032a32-b1; cf. 1034a24). Later in *Phys.* 2 (198a24ff.) he points out that all three causes – formal, efficient and final – tend to coalesce in one individual over against the

¹ 983a26. In this first book of the *Met.* his stated aim is to show by a review of his predecessors that between them they recognized these four and no others, thus confirming his own classification. Another brief enumeration is at *GA* 1.1, 715a3-7; the analysis of causation is appropriate as a preliminary to any science. For the causes as enumerated at *An. Post.* 94a21-23 see Ross's ed. pp. 638ff.

² Not of course Platonically perfect, but as entomologists speak of the imago as the 'perfect insect' in contrast to egg, larva and pupa.

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material. 'It is a man who begets a man' (this favourite tag occurs here at 198a26-27), and he is at the same time efficient, formal and final cause of his child.

What chiefly interests Aristotle is natural causation, but artificial production provides useful illustrative material because in it the four aspects are most obviously distinguished. So here he exemplifies the material cause by the bronze of a statue and the silver of a bowl, and though he does not carry this through completely with the other causes, one may do so without distortion.¹ Take a dining-table: its matter, wood; its agent or efficient cause, a carpenter; its form, four legs and a flat top; its final cause, the convenience of not eating off the floor. In the case of a human being, his material may be easily separated from the rest, but after that? His efficient cause, a *man*; formal, *manhood*; final, to be a *man*. The different types of causation may be separated conceptually but are collectively embodied in the parent alone.

Even essential causation, then, is multiple, as both bronze and the sculptor are, in their different ways, necessary for the production of a statue; and things may be causes of each other, as exercise of health (efficient) and health of exercise (final). Besides these four kinds (εἶδη) causes may differ in 'mode' (τρόπος), being prior or posterior (more immediately relevant; so sculptor is prior to artist and artist to man, the specific to the generic, as cause of a statue), essential or incidental (a sculptor is essentially the cause of a statue; that the sculptor of a particular statue was Polyclitus is incidental), potential or in actual operation. (All this too is in *Phys.* 2, ch. 3.)

*Material.*² Of the separate causes it is this one that still calls for most

¹ If nevertheless with caution. Sprague protests that to illustrate the four causes together by a single example from the crafts is philosophically wrong, and R. B. Todd has endorsed her criticism. (Sprague, 'The Four Causes: Aristotle's Exposition and Ours', *Monist* 1968; R. B. Todd, *JHI* 1976, 319.)

² ὅλη, τὸ ὅλον αἶτιον, τὸ ὑποκείμενον (in one of its guises; pp. 219f. above), τὸ ἐξ οὗ. At *Phys.* 195a19-20 the last phrase, unusually, is shared between matter and essence or form. Form too is immanent in the concrete object and may therefore legitimately, though a little confusingly, be so described. Similarly form as well as matter is included in τὰ ἐνυπάρχοντα αἶτια at *Met.* 1070b22. But far more often τὸ ἐξ οὗ refers, as is most natural, to the matter alone, as τὸ ἐξ οὗ γίνεσθαι τὴν ἐνυπάρχοντος. (*Phys.* 194b24; whereas στήλησις is οὐκ ἐνυπάρχον after the change, 191b15-16. Cf. e.g. *Met.* 1032a17.)

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attention. To be noted is its relativity.¹ In Aristotle's favourite illustration, bronze is the matter and sphere the form imposed on it, but bronze itself is a compound of form and matter, the matter being copper and tin, underlying which in their turn are the four elements out of which all physical bodies are made. In living nature the matter of an animal or plant is its anhomoeomerous parts, their matter in turn is the *homoeomerē*, and theirs the four elements (*GA* 715a8-11).² Beyond these corporeal elements there is only 'prime' or ultimate matter,³ something conceived as completely without definable character and incapable of existence in separation from at least a minimal level of form. Ultimate matter (ὕλη) is not (as we are tempted to think of it) body (σῶμα),⁴ for even the simplest body is a combination of matter and form. It is a conception logically demanded by Aristotle's system, combining as it does the relativity of matter and form, potency and act, with his horror of the infinite regress: 'One must stop somewhere' (*Met.* 1074a4). There cannot be an endless series of ontic retreats, *b* being potentially *a*, *c* potentially *b* and so ad infinitum. At the end (or rather the beginning) there must be pure potentiality, which is matter. It is obviously difficult to describe, and one could hardly wish for a better attempt than Plato's account of his own 'receptacle and nurse of becoming' in the *Timaeus* (49a, 50c51b); 'a difficult and obscure sort of thing... invisible and shapeless...

¹ τῶν πρὸς τι ἡ ὕλη, *Phys.* 194b8-9.

² ἀνομοιομερῆ ('of unlike parts') in animals are complete organs, limbs, or the like (hands, legs, arms, heart, head etc.); ομοιομερῆ, the matter of these, are substances like flesh, bone, sinew. See *HA* 486a5-14. The distinction extended to plants, whose homeomerous parts like bark and wood are mentioned at *PA* 655b37-56a1, *Meteor.* 385a9-11. (Gottschalk in *CQ* 1972 has stated a powerful case against A.'s actual authorship of *Meteorologica* bk 4, but the genuinely Aristotelian character of the passages mentioned in this chapter (cf. next note and p. 236 n. 2) need not on that account be doubted.)

³ Commonly referred to as 'primary' or πρώτη ὕλη. It must be granted to Charlton (see below) that scarcely any of the mentions of πρώτη ὕλη (listed by him on p. 129) refers unambiguously to ultimate matter, and several certainly do not. It may be probably detected at *Met.* 1044a15-17: 'Even granted that all things come ultimately from the same material or materials (ἐκ τοῦ αὐτοῦ ὡς πρώτου ἡ τῶν αὐτῶν ὡς πρώτων) and there is the same matter as ἀρχὴ of whatever becomes, there is nevertheless a matter proper to each.' Cf. also *Meteor.* 390a4-5: 'In the last resort matter is nothing but itself' (whereas each of the simple bodies, being distinguishable from the others, has of course its own form).

⁴ Thus a modern philosopher of science writes: 'When I speak of matter in this paper I mean material bodies like stars or grains of sand.' (W. von Leyden, *PAS* 1978, 31.) This represents the accepted idea of matter at the present day, but not A.'s conception of matter in the strictest sense.

partaking in a bewildering way of the intelligible . . . grasped without the senses by a sort of bastard reasoning . . . a plastic matrix (*ἐκμοργεῖον*) moved and shaped by what enters into it.' Though Aristotle criticizes Plato's conception,¹ the influence of the *Timaeus* appears undeniable.²

Today the whole idea of prime matter, 'the traditional view that Aristotle believed there is a single, eternal and completely indeterminate substratum to all physical change', has been challenged,³ and must therefore detain us a little longer. Pure matter (or no doubt the matter of anything, considered *as such*) cannot be known, except by analogy (*Phys.* 191a7);

The underlying nature can be known by analogy. As bronze is to a statue, wood to a couch, or in general as any unformed material, before being fashioned, stands in relation to any formed product; so is this substratum compared to substance, the individual, what *is*.

The best account of this ultimate matter is at *GC* 329a24-b1. I translate.

Our view [*sc.* as opposed to Plato's] is that *there is indeed a matter of sensible bodies*. It does not however exist by itself (*ἀλλὰ ταύτην οὐ χωριστήν*; cf.

¹ Objecting e.g. that the triangles cannot be *πρώτη ὄλη* (*GC* 329a23f.). This, especially in conjunction with the following sentence, is a clear instance of *πρώτη ὄλη* meaning 'primary (ultimate)' matter, which cannot of course have any regular shape. As a criticism of Plato it obviously fails.

² Charlton claims (*Phys.* 1 and 2, 142f.) that the Stoics invented prime matter by a conflation of Platonic and Aristotelian ideas. I suggest that they had good reason to see it as such, and little claim to be its inventors. For the 'receptacle' of Plato's *Tim.* and its relation to A.'s *ὄλη* see vol. v, 162ff. with notes. For bibliography on the *Tim.* and A.'s prime matter see Happ, *Hyle*, 95 n. 64, and for Happ's whole discussion 95-130. He, like so many, falls for the erroneous idea that *ἐν ᾧ* at 50d1 must necessarily have a spacial reference, which e8 shows it need not have. (See vol. v, 265 with n 3.) He calls Plato's *ἐκμοργεῖον* 'chora' throughout, and speaks of 'the important discrepancies between chora and *πρώτη ὄλη* (p. 122). For A. himself, of course, *χώρα* was *ὄλη* (*Phys.* 209b11-13). Happ asks how far he was right (pp. 124ff.).

³ Notably by Charlton, *Phys.* 1 and 2, 129-45, from which comes the quotation above. I shall try to support the traditional view rather than meet C.'s case point by point, for I do not think that all his points can stand up to an impartial reading of the explicit statements of *GC* 329a24-35. This is especially true of his pp. 134f., e.g. prime matter is certainly not the something 'coarser than air or fire but finer than the other elements' which A. rejects at 332a20-22, for it has no qualities at all. Charlton's argument has been criticized by Owens in *Phoenix* 1971, 281f., but Hamlyn (*Philos.* 1971, 169) found it 'altogether persuasive'. Relevant also is Schofield's article in *Phron.* 1972. Happ recognizes prime matter in his *Hyle*, 298-309. H. R. King 'A. without Prime Matter' (*JHI* 1956) has been answered by Solmsen in *JHI* 1958. Cf. Happ, *Hyle*, 302 n. 111.

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GC 320b 12–17) but always in conjunction with a contrariety.¹ From it are generated what are called the elements. These have been treated in more precise detail elsewhere, but since they too are derived in this way from matter we must say something of them also, assuming as primary principle the matter which is not separable but underlies the opposites. (Hot is not matter for cold, nor cold for hot, but the substratum is matter for both.) First then as originative principle² we have that which is *potentially perceptible body*, second the opposites like heat and coldness, and thirdly we come to fire, water and the like [i.e. the simplest corporeal elements], for these change into one another.

This passage, in which I have italicized some key clauses, tells us plainly that the simplest perceptible bodies are not the ultimate manifestation of matter but there is something that serves as *their* matter and may be called potentially a perceptible body.³ This can only be detected by a conceptual analysis, for in nature it always appears qualified by one of the opposites hot or cold, wet or dry, being in fact the substratum in which they inhere. Charlton argues that the simple bodies do not come to be out of any prior substratum but out of each other, a curious perversion of Aristotelianism. He quotes *Cael.* 3 ch. 6. There is of course, and has been, no time at which they first came to be out of any other body⁴ or from prime matter, for the universe is eternal (*Cael.* 1, chh. 10–12) and they have always existed in their present forms. Nevertheless if e.g. fire comes to be out of water – what is hot and dry from what is cold and wet – there must be a substratum to undergo the change, ‘for the opposites do not change’. As the *Physics* has it, ‘It is impossible for the opposites to be affected by each other, but this difficulty too is resolved by the presence of a substratum different from the opposites.’⁵ Later in GC (334a 23–25) he actually says that fire can turn into water and water into fire *because*

¹ I.e. with one of a pair of opposites such as hot and cold, wet and dry. The inseparability of matter from the *πρᾶγμα*, the concrete perceptible object of which it is the matter, is repeatedly asserted in the *Physics*. See 209 b 23, 212 a 1, 214 a 14–15, 217 a 24–25.

² Or cause, ἀρχή. For its relation to αἴτιον see *Met.* 1013 a 17 (πάντα γὰρ τὰ αἴτια ἀρχαί) and p. 178 n. 2 above.

³ For a reminder of the identity of matter and potentiality see pp. 124f. above. At 332 a 26 A. says that beyond the four simple bodies there is nothing αὐτῶν τῶν.

⁴ 329 a 8–13. This will be aimed at the Ionian monists, who saw water, air or the corporeal ἀντιστοιχία of Anaximander as primary and the other elements as derivatives of it.

⁵ *Met.* 1069 b 6–7, *Phys.* 190 b 32. (Cf. 189 a 22–23.) For amplification and further quotations see pp. 104f. above.

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they have a common substratum, and in the *Metaphysics* not only that whatever comes to be has matter (1032a20, 1033b18-19) but that this is true of things that change *into one another*.¹

When this point is not at issue, Aristotle does not hesitate to call water potentially air and so its matter, and air 'in another way' potentially water, to express the fact that they can be transformed into each other.² At the same time they exhibit an ontological hierarchy: fire as the highest, rarest and finest in texture, whose natural motion is towards the outer boundary of the universe, approaches incorporeality³ and perfect actuality more nearly than the rest, while heavy sluggish earth, collecting at the centre, comes lowest in the scale. The relativity of the notions of matter and form, potency and act, is familiar, and no barrier to the presence of ultimate matter below all of these.

With the relativity of matter goes Aristotle's insistence that only the proximate matter of anything can properly be called *its* matter. True, a plant is made up of the four elements, but so is everything else in the physical world, so for the natural scientist to talk of them as potentially plants is unhelpful. Indeed, whichever of the four causes is under consideration, one must always seek the most relevant to the particular case.⁴ This goes far to account for the scarcity of undoubted references to ultimate matter. Though a logical necessity, it is of no interest or importance to the scientist or philosopher such as Aristotle, student of the natural world and its causes. 'One must state the nearest causes, e.g. as regards the matter of a thing, not fire or earth but what is peculiar to it' (*Met.* 1044b1-3).

Finally, at *Cael.* 305a14-32 Aristotle argues that the elements cannot be generated either from what is incorporeal or (except for each other) from what is corporeal. Charlton (133) cannot reconcile this with the idea of a universal indeterminate substratum, but (a) the substratum is not corporeal, and (b) Aristotle would shrink from applying

¹ *Met.* 1032a20, 1033b18-19; and cf. *Cael.* 312a30 on the 'one common matter, of the four mutually transformable elements'.

² *Phys.* 213a1-4 (cf. Ross *ad loc.*), one of the passages which Charlton (p. 131) thinks 'need explaining away' by the upholders of the traditional view. I fear that the innovators have even more explaining to do.

³ *Top.* 103a7, 146a15; *Phys.* 216b35-17a1.

⁴ τὸ ἀπὸ τῶν αἰτιῶν, *Phys.* 195b12-15. The point has been noted already on p. 224, and cf. p. 227 n. 3, 'a matter proper to each'.

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to it the epithet ἀσώματον (bodiless), which denoted for him what is above, rather than below, corporeality. Thus air, being of finer texture than water, is 'more incorporeal' than water, and fire as the finest of all, whose natural place is at the outermost confines of the physical universe, is 'most incorporeal of all the elements'.¹ Absolute incorporeality belongs to the highest, divine substances, the intelligences which control the motions of the heavenly spheres.

'Intelligible matter.' This is a liberal translation of a phrase which occurs three times in Aristotle's remains. It sounds strange, for we have been repeatedly told that 'matter' signifies the formless, indefinable, 'essentially unknowable' (*Met.* 1036a8). That is true of matter in the physical world, but here his almost metaphorical suggestion is that in the world of intelligible concepts there is at least a comparable distinction between form and matter. It appears in two ways:

(i) In logic, the genus, being less fully determined than its species, may be regarded as their matter (*Met.* 1058a23-24). 'As from sensible matter comes the concrete substance, so too does the species come from the matter of species' (1023b1-2). It is the 'substratum' of their differentiae, as 'figure' underlies 'a plane' or 'a solid', and the genus 'voice' is the matter of the (spoken) letters.²

(ii) Secondly it appears as a purely mathematical concept. Mathematics, as we know (p. 132 above), has no separately existing objects of its own, as the Platonists thought. It treats of certain features of physical objects, not, however, *qua* physical³ but in isolation, mentally abstracted and as it were idealized. These abstractions – mathematical as opposed to physical lines, planes, surfaces, numbers – are purely intelligible, and in them too the distinction between matter and form may be drawn. Alexander (p. 510.3 Heiberg) identified the matter with extension, but perhaps mathematical matter is only a particular

¹ *Phys.* 212a12, *De an.* 405a7. Note that ἀσώματον has both comparative and superlative forms.

² *Met.* 1024b3-4, 1038a6-8. In regarding it as unproved that the wider conception was in A.'s mind when he wrote bk Z, Ross (*Metaph.* II, 200) seems to have overlooked the latter passage.

³ *Met.* 1036a9-12: 'Some matter is sensible and some intelligible. Sensible matter includes bronze, wood and all matter that is changeable, whereas intelligible matter is that which inheres in physical things not *qua* physical, like the objects of mathematics.'

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example of sense (i), matter as genus. At 1045a35 Aristotle gives a mathematical example of this, namely a circle,¹ the intelligible matter of which is 'plane figure', whereas its specific differentia or form, which completes the definition, lies in the fact that its bounding line is at every point equidistant from the centre.

The final cause has been sufficiently discussed in ch. vii.1. Its supreme manifestation, the primary cause of the whole universe, we shall come to later. Much has been said also of *the formal cause*. We might add one more testimony to its persistently substantial, semi-Platonic existence at *Met.* 1010 b 21. A wine, says Aristotle, may taste sweet at one time but not at another, whether the change be in the wine or the drinker, but 'the sweet' (or sweetness) never changes but always keeps its true character.

Perhaps the most important thing to notice about form is its identity with function: complete realization of form is not a state (*hexis*) but an activity (*energeia*). This has been pointed out on pp. 218f. Here I shall allow myself to quote another nod of agreement from modern biology provided by the botanist Agnes Arber. The idea that form and function are antithetic conceptions she believed to have been mainly fostered by an analogy, 'mistaken for something approaching an identity', between human artefacts and living beings. (If so, it is interesting that a devotion to the same analogy brought Aristotle to the opposite conclusion.) An artificial construction is first shaped and put together out of its parts, and only after its complete formation and the provision of a source of energy can it fulfil its maker's purpose. 'It is possible here to think of form and function as disjoined; but in living creatures there can be no such separation, for form (in the narrower sense), and function, are merely two aspects of the same unity. The word form, in its wider meaning, must be held to synthesize form in the more obvious sense, which is static, and function – the dynamic – which is the reverse side of the same shield; in other words form, as understood in morphology, should comprehend and fuse both static and dynamic elements.'²

¹ Alex. does not mention the example in his commentary, but this is hardly a sufficient reason for excising it as Jaeger (but no other editor) does.

² Agnes Arber, *The Natural Philosophy of Plant Form*, 3.

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*Efficient cause.*¹ Its identity with the formal has been mentioned, but can hardly be over-emphasized. *Met.* Z ch. 7 tells us that generation (except spontaneous) is natural or artificial. In both kinds the efficient cause is identical with the form of what is being produced, present in another: 'The agent is the so-called formal nature, specifically the same as the thing produced, though it is in another individual. It takes a man to beget a man.' That the same applies to the result of human artifice we have already seen illustrated in the building of a house. The form must first be present in the mind of the artificer. He adds the example of a doctor (1032b6-10). We call him the efficient cause of health in a sick man, but he produces it by a train of thought: 'If *this* is health, then *this* is needed to make the subject healthy, and if *this*, then *this*.' 'This' is a definite idea which he has in mind (discovered, not created, by his thought) of e.g. a harmonious state of the bodily parts, which in turn calls for, say, warmth. His reasoning ends in a practical step which he himself can take, and from then on the process is called creation of health. As Aristotle says elsewhere (*EN* 1112b23), the last stage in the intellectual analysis coincides with the first stage of the making, i.e. the form must be complete in the mind of the artificer before it is realized in the appropriate matter.

In all this Aristotle owes much to his Platonic inheritance in the shape of a belief in the actual existence of substantial form. Indeed his doctrine appears in a more than embryonic state in the *Cratylus* (389 c), where the example is tool-making:

The craftsman must discover the tool formed by nature for each separate purpose and reproduce it in his material, not according to his own whim but as nature ordained it. He must know, e.g., how to render into iron the form of auger naturally adapted to its several uses.

Nor would any medical authority wish to deny the practical conclusion that the conditions for restoration of health are objectively determined and must be learned.

(2) CHANCE²

It is not accidental that Aristotle's explanation of chance in *Physics* 2

¹ τὸ ὁρ' αὐτὸ, ἀρχὴ κινήσεως, τὸ δὲν ἢ κινήσεως, τὸ κινουῦν.

² A.'s theory of chance and its implications have a fascination of their own, which must be my

chli. 4-6 follows immediately on his account of the four causes. Part of his purpose is to show how chance as a cause 'fits into the division of causes already made' (196b8-9). Some earlier thinkers had claimed that chance was not only an independent cause but (as many would nowadays agree)¹ the first cause of everything. If true, this would ruin not only his fourfold scheme, but his whole teleological hypothesis. From the general constancy of nature he inferred that she was subject to laws, which implied something above blind forces at work. Yet he could not maintain that these laws were without exceptions. Things do happen contrary to his thesis that everything moves towards the perfection of its form, and in general he must allow for the universal belief that many things happen, as people say, by chance.² He therefore qualifies his downright statement about laws of nature by saying that things conform to them not rigidly but either always or for the most part.³ Now he tackles the exceptions. What truth lies behind the popular expressions 'chance' and 'luck'? Are there actually uncaused events? If not, is the cause of the apparently random discoverable? One thing he has carefully prepared us for. It will not be a cause on the level of the four already posited, the principles on which nature habitually works, for it only operates when, exceptionally, these principles appear to be absent.

To understand what follows, it should be noted at the outset that most of what Aristotle has to say is not directed to occurrences in which the purposes of nature or art are thwarted, with results *opposed*

excuse for allowing them what some may consider disproportionate space. The following account is based on the *Physics*, but see also *Met.* E ch. 2, where the existence and nature of the accidental (*τὸ κατὰ συμβεβηκός*) are explained, and it is shown that there can be no science of it.

¹ For the example of Monod, see pp. 109f. above.

² 193b11-15: 'But since some things happen otherwise [*sc.* than always or for the most part], and everyone says these occur by chance, it is evident that chance and spontaneity are realities' - another example of his readiness to base himself on the general opinion (pp. 90f. above).

³ Pp. 172f. above. See also Barnes, *Articles on A.* 1, 74-6. The modern scientist faces the same situation, described by Toulmin, *Phil. of Sci.*, 47-9: 'the kinds of regularity we encounter in everyday life ... are hardly ever invariable ... We only expect these regularities to hold on the whole, and we are not particularly disconcerted when we encounter the exceptional case.' But for the physical scientist 'It is a matter of professional concern ... to find out exactly what they amount to ... under what conditions departures are and are not to be expected.' Yet the scientist probably believes, with Monod (n. 1 above), that the world is ultimately a product of pure chance, whereas A., who did not, saw reason to believe in events the causes of which were by their very nature undiscoverable. None of this seems to me to deserve Ross's criticism that A. 'had no clear conception of a universal law of causation' (*Arist.*, 101).

to the natural and the good. He is much more concerned with the way that achievements *similar* to those of nature and art come about by apparently unaccountable agency – including what is popularly termed ‘luck’. As we have seen (p. 186), he does not deny that nature, like art, has her failures, due to the recalcitrance of matter, but at present what interests him more is how a living creature could be produced without parents, the regular agents of birth, as he believed it could; but what interests him more than either is the question whether one can account causally for such a sequence of events as (to make his own example) the following: A man (call him Pratt) goes to the market for some purpose of his own, meets another who owes him money, and collects the debt, this not being the purpose for which he went to the market.¹ Can one express the causal connexion, if any, between going to the market and getting the money, which would ordinarily be described as a chance or lucky result?

This seems, no doubt, an arbitrary limitation of the field of chance events. However, (i) Aristotle was thinking in Greek, and the two words which he uses, *tychē* and *automaton*, do not correspond *exactly* to any two English words; and (ii) even our own conceptions of luck or chance, which approximate to their meanings, are commonly limited to such occurrences. Suppose that on my way to lecture in Cambridge one morning I meet a man whom I know slightly and who lives in Birmingham. I exchange a word with him, learn that he is only in Cambridge for the day, and pass on. I do not exclaim ‘What a coincidence!’ or ‘What a piece of luck!’ But suppose that at the time I was worried by a problem, that this was the only man of my acquaintance with the specialized knowledge needed to put the solution within my grasp, but I had not known how to get in touch with him. Immediately the words ‘luck’ and ‘coincidence’ occur to me, and I may wonder whether after all there is any explanation of events of this type; and the difference between the two cases is that the second fulfilled a purpose, enabled me to do something which I should have planned to do had I known how. This is the kind of events which Aristotle designated ‘lucky’ or ‘spontaneous’; hence his description of them as ‘events in

¹ The reference to collecting subscriptions for an *εταρος* is obscured by a disputed reading and in any case beside the point. If interested see Ross’s notes.

the sphere of purpose' (196b29), not designed for a purpose but having the same result as if so designed.

So much for the limitations of the enquiry and the emphasis laid on different aspects of the problem. Chance (*automaton* including *tychē*: the two are not distinguished immediately, cf. 196b31)¹ may be either an internal or an external cause (197b36–37). As internal cause it is manifested in spontaneous generation, its less interesting aspect both to Aristotle and – naturally – to us who no longer believe in it. At *Met.* 1032a12, Aristotle's familiar division of becoming into natural and artificial is enlarged by the addition of 'spontaneous', which may occur within the field of either of the other two. In nature it refers to the current belief that living creatures such as (but not only) maggots were engendered 'without seed' in various putrefying materials, and the only explanation is that in such cases 'matter can set in motion the changes normally initiated by the seed', i.e. by a formal-efficient cause. Normally passive, changing only when acted on by a form, matter must be supposed, exceptionally, to be its own efficient cause,² acted on not 'by another', as the laws of nature demanded, but 'by itself'. It is a pity that observational science had not advanced sufficiently to render such an exception unnecessary.³

¹ A. uses two terms, *tychē* and *automaton*. *Tychē* was the common word for chance, luck or fortune, also personified and worshipped as a goddess like the Roman *Fortuna* (vol. II, 419 n. 1). *Automaton* had much in common with its modern derivative 'automatic', as used e.g. in Homer of the tripods invented by Hephaestus, which ran of themselves (*Il.* 18.376). Here it will be either simply transliterated or rendered 'spontaneous(ly)'. (But cf. p. 239 n. 4 below). Charlton fears that 'spontaneous' suggests acting out of free will (p. 105), but the phrases 'spontaneous combustion', 'spontaneous generation' are familiar.

² *Met.* 1034b4 δὲ ὅταν ἡ ὅλη δύναμις καὶ ἀφ' αὐτῆς κινεῖσθαι ταύτην τὴν κίνησιν ἢν τὸ σπέρμα κινεῖ. The phenomenon seems to have puzzled him, and he suggests different explanations in different places. At *GA* 743a35–36 (and cf. *Meteor.* 379b6–8) he mentions heat as the agent, and at 762a19–22 he suggests water, because it contains πνεῦμα which in turn contains life-giving (ψυχικήν) heat. This would not, however, make spontaneous generation any the less an exception to natural laws, according to which the engenderer must be formally (specifically) identical with the engendered. For a detailed physical theory of how spontaneous generation works, see *GA* from 762a8 to the end of book 3.

³ Contrast e.g. *Met.* 1071b29 οὐ γὰρ ἔστι ὅλη κινήσει αὐτὴ ταύτην. For details of the belief in spontaneous generation, which included certain species of insects and fish, see Guthrie, *In the Beginning*, 39–42 with notes. In spite of experimental disproof by F. Redi in the 17th century, it took the work of Pasteur and Lister to convince the world. Buffon and Linnaeus in the 18th century still believed in it. I learn from G. H. Lewes that it was revived by one Pouchet in 1859, and Lewes's own language still shows a certain caution. See his *Aristotle* (1864), 364 with n. 53. For a full history of the doctrine from the Presocratics to the 19th century see W. Capelle, 'Das Problem der Urzeugung', in *Rh. Mus.* 1955.

In *Phys.* 2, 4-6, the subject is the second of the two main divisions, chance as external cause. *Tychē* and *automaton* in the *Metaphysics* referred mainly to the spontaneous generation of new *substances*; in the *Physics* the subject is *events* and their causes. Since these are often attributed to chance and spontaneity, Aristotle asks himself three questions (196b7-9): what relation they bear to the main scheme of causation, whether one should draw any distinction between the two, and in general what is meant by them. As usual, he starts with a review of earlier opinions.

(i) Some have rejected the whole idea of chance. Every event, they say, has a definable cause, e.g. the cause of Pratt's recovering the debt was a desire to buy things in the market. This applies to the early cosmogonists, who, however, were not consistent, but in the detail of their cosmic systems did make use of the expression that some things happen by chance. He instances Empedocles, who in his general suppositions left no room for it, yet spoke of the motion of air and the original structure of animals as haphazard.¹

(ii) Others have taken the opposite view, that the whole universe is a product of chance. So he writes with obvious allusion to Democritus and his like (196a24-28): 'There are some too who ascribe this heavenly sphere and all the worlds to *automaton*.² They say that the vortex arose spontaneously, that is, the motion that separated and arranged the whole in its present order.' This he refutes by his argument from the constancy of nature (pp. 112f. above), manifested most perfectly in the celestial movements themselves, which these philosophers claim to be explaining. They in fact admit that sublunary generation is not at the mercy of chance (it is not a matter of chance what species of plant springs from a given seed),³ yet far greater irregularity is to be observed in sublunary nature than in the celestial regions.

(iii) Thirdly, there are those who have held that chance is 'a device and mysterious power, inscrutable to human intelligence'. Whom

¹ 196a20-24; cf. *GC* 334a1-2. On the justice or otherwise of the criticism, see vol. II, 159f., but cf. also the quotations from Empedocles on p. 161.

² 196a24-28. ἀπὸ τᾱυτομάτου καὶ τύχης, Simpl. (DK II, 101). The word most commonly applied to the first cause in the atomists is ἀνάγκη. On its compatibility with τύχη see pp. 112f. above.

³ 196a28-33. Cf. *PA* 641b26-28.

exactly Aristotle has in mind is uncertain; most probably the worshippers of the goddess Tychē.¹

In picking his way between these divers opinions, Aristotle is guided by his 'nominal' definition of chance as the cause of events which happen neither always nor for the most part (stated at the beginning of ch. 5). The argument to establish its nature starts from a reiteration of the distinction between what is something essentially, by its own nature (καθ'αυτό), and what is only accidentally or 'in virtue of a concomitant' (κατὰ συμβεβηκός). This holds good of causes as of things (196b24-25), and he offers a familiar example. The cause of a house is the art of building as represented by the skilled builder, but incidentally it may be 'the pale' or 'the cultured', if he has these qualities too; and as Wicksteed remarked² to bring out the thought at the back of Aristotle's mind, if our builder's cultivated tastes bring us a pleasant acquaintance that is a lucky chance. We can now say what he means by the statement that *tychē* and *automaton* are 'in the sphere of purposive events' (ἐν τοῖς ἐνεκά του, 196b29). Their result is such as would have been recognized as a purpose and determined the action had it been anticipated. Pratt would have gone to the market to recover his debt had he known the debtor would be there. As it was, his going made for that end accidentally. The result would not, however, be ascribed to chance (perhaps better in English 'coincidence') if he went there either expressly for that purpose or as a regular habit.

At this point (197a5) comes the definition of *tychē*; 'an incidental cause in the sphere of actions-for-a-purpose which involve rational choice'.³ Here the distinction between *tychē* and *automaton* begins to appear which is drawn explicitly in ch. 6. *Tychē* is confined to the

¹ According to the *Placita* (DK II, p. 122, 59 A 66) Anaxagoras and Democritus called chance αἴτιον ἀδηλου ἀνθρωπίνῳ λογισμῷ (αἰτία ἀδηλος ἀνθρωπίνῃ διανοῖᾳ Arist. *Phys.* 196b6, but ἀνθρωπίνῳ λογισμῷ at *Met.* 1065a33-34), but Democritus at least would not have called it θεῖον καὶ δαιμονιώτερον. Simplic. (I, 333 Diels) mentions the cult of Tychē, Plato *Laws* 709b (and cf. *Tim.* 25 e, *Rep.* 592 a), a Delphic invocation and an Orphic hymn (now no. 72). But the coupling of τύχη with the epithet θεία was a commonplace in Greek literature (for Herodorus, Pindar and the tragedians see LSJ s.v. *ad init.*), and this may well be all that A. had in mind.

² *Physics*, Loeb ed., 148 n. a.

³ προαίρεσις. ἡ γὰρ προαίρεσις οὐκ ἀνευ διανοίας (197a7; cf. *EN* 1139a33-35). (It is the subject of *EN* 3 ch. 4, 1121b4ff.) Cf. 197b5 ἡ δ' εὐδαιμονία πρᾶξις τις, and the expression εὖ πράττειν. We translate it 'to fare well', but in Greek eyes it was something more active, to have one's enterprises turn out well. Only he who goes to seek his fortune can find it.

world of adult human beings. *Automaton*, the wider term, is an incidental cause in the sphere of purposive events in general, which, as he is careful to repeat (196b 21-22), includes the teleological operations of all nature. It may apply to the behaviour of the lower animals or inanimate objects. Aristotle illustrates it by the case of a horse which escaped harm by happening to run to a place of safety, and by the curious example of a stone which fell and struck a man. This too fulfilled a purpose, 'because it might have been dislodged by someone for the sake of striking him' (197b 31).¹ The purpose accidentally achieved was that of an imaginary enemy!² The essential purpose was nature's, that it should seek its natural place (Simpl. 348.32 Diels).

According to this rather tortuous argument, the incidental result is not additional to the essential one, but supersedes it. This seems unnecessary (if the horse ran to get a drink, there is no reason why it should not have achieved this as well as its safety), and the reason is simply that Aristotle is swayed by his derivation³ of *automaton* from *auto* and *maten*, 'itself in vain'. The actual definition of events which happen thus 'automatically' or spontaneously comes at 197b 18:

The term 'spontaneous'⁴ is applied to an event in the general class of the purposeful, if it did not happen for the sake of what actually resulted, and if its cause is external to it. 'By chance' are spontaneous events in the field of rational choice, for such as are capable of it.

Having defined chance to his own satisfaction, Aristotle can return to the earlier views and say how far they are justified. Consider two of them, (a) that it is something mysterious and inscrutable to human reason, and (b) that there is no such thing as chance but for everything

¹ A remarkable, and presumably quite unintentional, parallel occurs in Monod's *C. and N.*, 111. His example of absolute coincidence is of a doctor who, on his way to visit a patient (his καθ'αυτό purpose) is struck and killed by a hammer dropped by a workman repairing a roof. Such an event is 'essentially unforeseeable', and explained, exactly as in A., by 'the complete independence of two causal chains of events whose convergence produces the accident'.

² This may partly account for A.'s failure to deal with cases of *bad* luck, all the more noticeable because he does acknowledge its existence (197a 25-27, p. 241 below).

³ Pretty certainly erroneous. See Ross's note, *Phys.* II, 523. μόνην was used to express both 'purposeless' and 'in vain', 'failing of its purpose', but at 197b 22-23 and 25-27 A. makes clear that he is using it in the latter sense.

⁴ Or 'of itself'. It is natural, and usual, so to translate αὐτόματον and ἐξ αὐτομάτου. Note, however, that in the case of the horse which ran, or stone which fell, 'spontaneously', A. assumes the cause to be external, i.e. the stimulus came from outside. He reserved the term 'internal cause' for the supposed phenomenon of spontaneous generation.

its proper cause. Both find a certain justification in the facts, resulting from a further characteristic of chance events, namely that their *possible* causes are infinite, or at least indefinite, in number. If Pratt had gone to the market to get his money, and got it, this would exemplify essential causation, and the cause would be single, recognizable, and appropriate to the effect. But since he went there for another reason, which was only incidentally the cause of his getting the money, the cause is not appropriate to the end achieved (recovery of money) and may on the known data be one of an indefinite and incalculable number of possibilities – to make purchases, to meet a friend, to see a spectacle or on legal business.¹ One may therefore legitimately say in the first place that things do happen by chance, in the defined sense that they occur incidentally to the primary purpose of an action, and that this makes them incalculable; for, given the action and the result, and no more, we cannot infer the true cause of the result, which remains on the available data one of an indefinite number of possibilities. On the other hand, it is wrong to say that there is such a thing as pure chance if the term is used absolutely in the sense of an irresponsible agent which works entirely outside and *unrelated* to the regular scheme of causation. It must be qualified by the explanation that by chance we mean an incidental result from a regular chain of causation which was directed at some other end. Since Pratt's debtor had his own motive for going to the market, it can also be explained as the crossing of two lines of essential causation.

(c) The same premise, that chance is an incidental outcome of purposive actions or events, serves for a brief demolition of the Democritean² view that the whole world came into being by chance. Since chance events are now by definition incidental offshoots of essentially end-directed events or actions, it follows that final causation is prior to chance as a cause. The essence of an event, i.e. its purpose, must exist already if it is to have the accidental concomitant,³ or incidental

¹ The examples are A.'s (196a4–5, 197a17–18). 'Market' of course translates *agora*, which in a Greek city served many purposes besides buying and selling. For the ἀπορία of incidental causes, and hence of τύχη, see 196b27, 197a20.

² For the probability that all these views represent different aspects of Democritean atomism, see vol. II, 418f.

³ συμβεβηκός. Cf. p. 238 above.

Additional notes

outcome, which is chance. So he moves to his triumphant conclusion (198a10-13): 'Hence however true it may be that the universe arose spontaneously, mind and nature must be the prior cause both of this world as a whole and of many other things.' Here, as Wicksteed put it, he 'unmasks his battery' and reveals the strategy behind the whole exercise. If chance is no more than the offspring of a coincidence between lines of purposive action, then of course purpose must precede chance. He is defending the thesis that the world is a product of design, the thesis upheld by Plato in *Laws* 10 by the argument from motion; and as that book showed, the opponents are not only the atomists, who contradicted the thesis in the name of physical science, but the Sophists and their spiritual heirs, who though no scientists themselves, invoked these theories to lend weight to their own subversive ethics. If nature is ultimately ruled by chance, and chance is prior to design, then law, with all its kindred or derivations, can reasonably be called *unnatural*. Plato's answer was that design came first and was the highest manifestation of nature. The antithesis between *physis* and *nomos* was spurious: *physis* itself was subject to *nomos*, and the 'life according to nature', which the new moralists claimed to preach, should imply not the overthrow of law but its apotheosis. They are met on their own ground.¹

All this lies behind Aristotle's present argument, for in this matter he is an ardent Platonist. Later in *Physics* 2, as we have seen in a previous chapter, he undertakes a rational defence of the teleological hypothesis itself, but for both men it was more like an article of faith, and Aristotle's refutation of the mechanists executes a perfect circle: 'Accept my premise that every chance event is a by-product of a pre-existing purpose, and you must admit you were wrong in holding that chance was prior.'

ADDITIONAL NOTES

(1) *Good and bad luck*. Although Aristotle acknowledges the existence of bad luck, he virtually excludes it from his explanations. Yet the victim of the rock-fall will hardly be persuaded to regard it as a lucky event because it might rejoice his enemy (p. 239 with n. 1 above); and any casual meeting

¹ For a fuller account see vol. V, 359-66.

between two people which fulfils a purpose for one may for the other have the opposite effect. One may agree that *neutral* coincidences do not demand explanation (p. 236 above), but the claim to be explaining chance events, while excluding misfortunes, will never seem satisfactory. The reason of course lies in the motive with which he approached the question of chance, namely to confirm the fourfold classification of causes by establishing that chance was not to be admitted as a fifth wheel on the cart. However, where he acknowledges that luck may be bad, he also makes a psychological point which is perhaps worth mentioning (197a25-30):

Chance is called good or bad according as its results are good or bad. When they are of a certain magnitude we speak of good fortune or bad fortune. And so to come within an ace of some great evil or benefit is to experience good or bad fortune, because the mind sees it as actually there: 'a little way off' shrinks to here and now.

If in January I have an income of £10,000, and in December the same, I cannot be said to have suffered a loss. But if my rich aunt, who had promised to leave me her fortune, died during the year having just heard some slander about me and cut me out of her will, I would call this bad luck, just as a narrow escape, leaving one as one was before, is a piece of good luck.

(ii) *Laws and exceptions.* If a substance which normally behaved in a certain way was observed, occasionally and exceptionally, to behave otherwise, a chemist studying it today would hardly dismiss the exceptions as due to chance. It would be his job to find out under what conditions the variations took place. Besides the main law (say 'x is soluble in water'), he would seek a subsidiary one, such as 'x is insoluble when accompanied by y'. In one place Aristotle too shows himself aware, in a rather contorted way, of the rashness of jumping from a general causal principle straight to chance (*Met.* 1027a22-26). The object of knowledge, he says once again, must be what occurs either always or for the most part, as e.g. honey-water is usually good for fever, and if ever by accident it is not, one can never foretell when the exception will occur; for if one can say 'It does not hold at the new moon', one must again add 'always or for the most part' - something which can never be said of the purely accidental. In other words, if one can forecast the exception it is not subject to the unaccountability of chance but falls under a separate law. (Ross's comment, that this 'implies the view that there is nothing which is objectively accidental' (*Metaph.* 1, 361), is surely wrong. In his last line, 'they' should be 'some of them'.)

XIII

THEORY OF MOTION AND THEOLOGY

(1) SOME CRITICISMS OF THE THEORY OF FORMS

'Every product of nature has within itself a source of motion (*kinēsis*) and rest.'¹ Aristotle's philosophy was rooted in nature, especially living nature, and the characteristic of natural beings which called above all for explanation, and offered the greatest challenge to the philosopher, was that they moved about, changed, were born and died. This we have had to notice already, but not its tremendous consequences for his whole conception of the world and its causes. Final-efficient causation was, in his view, foreign to the static world of Platonic Forms or mathematical (*Met.* 996a27-30), which at once put them out of court as causes or explanations of the physical world; but in his eyes this was the whole *raison d'être* of the Forms. His many criticisms of them are divided between their existence and intrinsic properties and their relation to sensibles, but stripped of any causal function they become an unnecessary hypothesis and their existence or otherwise ceases to matter.² On this he can scarcely even be polite: 'So goodbye to the Forms. They are idle prattle, and if they do exist are wholly irrelevant' (*An. Post.* 83a32-34). Without, then, attempting to explore in full Aristotle's objections to the doctrine of Forms,³ we may prepare for

¹ *Phys.* 192b13-14; *Met.* 1059b16-18, and cf. opening of *De caelo*. For the wide coverage of *kinēsis* see p. 120 n. 2 above.

² Not that A. had any doubts about it; see e.g. *Met.* 1059b3 τὰ μὲν οὖν εἶδη ἐπὶ οὐκ ἔστιν, γὰρ ἐπεὶ.

³ Something was said of *Met.* A chh. 6 and 9 in vol. v, 426-8. A handy numbered list of criticisms is in Grote's *Aristotle* II, 257-61. No treatment is offered here of *De ideis*, an early work of A. in two books, from which we have extracts in Alexander's commentary on the *Met.*, printed in Ross's *Fragmenta*, 122-9. Alex. shows that the criticisms of the Forms which figure in *Met.* A ch. 9 as mere headings, of scarcely intelligible brevity ('the arguments from the sciences', 'the one over many', 'the thinking of what has perished', 'the third man'), had been more fully expounded in *De ideis*, and quotes the relevant passages. Of modern work on the treatise may be mentioned Wilpert, *Frühschriften* I, π. 1840v (1949); Berti, *Primo A.* ch. II, 2 (1962), gives a useful review of scholarship on *De ideis* to date; Leszl, *Il 'De ideis' di A. e la teoria platonica delle idee* (1975, with critical text and comm. by D. Harlfinger); S. Mansion,

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our ascent to the First Cause by recalling one or two from *Met.* A ch. 9 which concern their relation to the natural world. First, the Forms offend his sense of economy.¹ Far from explaining the natural world, they merely, as otiose duplicates of sensibles, doubled the number of things to be explained. To be valid, explanation must be based solidly on internal principles, abstracted from observations of the world itself. Aristotle's bent resembled rather that of a nineteenth-century scientist, as opposed to uncritical religious faith on the one hand and *a priori* rationalism on the other. So far as the limited means at his disposal allowed, he rested his system on particular cases in the sensible world. Had he been less concerned to work out his metaphysics to its highest point on the same principles which he detected in the works of nature, his god might have borne more resemblance to the Creator of the *Timaeus*, and provided a Cause more satisfying to the religious instinct. As it was, his god stood at the end of a chain of reasoning, not the beginning, and his nature was strictly limited by all that had gone before.

That is to anticipate. The same thought, that it is no good trying to explain the world by introducing principles external to it, is at the root of other objections also. Even if a set of transcendent realities existed, they could not contribute either to its being or to our knowledge of it.

991a12-14. Again, the Forms are of no assistance either to our knowledge of other things (for they cannot be their substance; otherwise they would have been within them) or to their existence, if they are not inherent in the objects which are said to participate in their being... (991b1) It would appear impossible for an essence to be separate from that of which it is the essence. How then can the Forms be essences when they exist apart? In the *Phaedo* the Forms are said to be responsible for both being and becoming, but granted these are Forms, the things that 'share in them' cannot be produced without a motive cause.²

¹ 'La critique de la théorie des idées dans le π. 1840v d'Aristote', in *R. Philos. de Louvain* 1949 (against Cherniss, *ACPA*, 223-318, 498-505); J. Annas, 'Forms and First Principles' in *Phron.* 1974; on a specific topic, G. E. L. Owen, 'A Proof in the π. 1840v', in *JHS* 1957 (1), and R. Barford, 'A Proof from the *Peri Ideon* Revisited', in *Phron.* 1996.

² A. certainly anticipated William of Ockham in the demand for economy of *entia*. Cf. *Phys.* 259a8 (of the First Cause): 'We must assume it to be one rather than many, and finite rather than infinite in number, for given the same results, one must always prefer the limited number.'

³ So also the twin passage at 1080a2. It is interesting that the *Pho.* is still A.'s source for the doctrine of Forms. Cf. *GC* 335b9-16: 'Some thought the Forms a sufficient cause of becoming,

Some criticisms of the Theory of Forms

To this complaint he constantly returns. How can anything 'participate' in something else, when the something else is a separate entity existing in its own transcendent world? To regard the Forms as patterns (*paradeigmata*) does not help, for it leaves out the motive causes needed to make sensible objects conform to the models provided. In short, the whole business of patterns and participation is metaphorical nonsense: 'to say that the Forms are paradigms and that the other things share in them is empty talk and poetic metaphor. What is it that *does the work*, with an eye on the Forms?'¹ Again in book Z (1033b26-28): 'Evidently then the causality of Forms as some understand them (if there are such things apart from particulars) is ineffective in regard to comings-to-be or substances.'

The Forms cannot provide the motive or efficient element in causation. 'Above all one would like to ask, what can the Forms possibly contribute to any of the sensibles...? For they are not the cause of motion or of any change in them at all' (991a8). This naturally affects ethics, 'Even if there is some one Good universally predicated, or existing apart by itself, it could clearly not be practised or possessed by a man' (*EN* 1096b32-34). It is the old fault of arguing in the abstract (*logikōs*) rather than from nature, which Aristotle expressly blames for the doctrine of Forms (p. 197 above).² That the *Phaedo* did claim the Forms as sole and sufficient causes may be granted, and Aristotle's impatience with such a doctrine is understandable. Knowing his very different temperament one may imagine how much satisfaction he would get from a passage like the following (*Pho.* 100c-d):

I can no longer understand those clever causes. If anyone tells me something is beautiful because it has a fine colour or shape or the like, I forget the rest,

as Socrates in the *Phaedo*... believes them to be necessarily causes of coming-to-be and passing away.' At that stage of his thought at least, Plato believed in the Forms both as transcendent patterns and as 'shared in' by particulars, a combination which was to A. absurd. In the later dialogues the notion of *mêtefis* fades out in favour of *mimesis*. Cf. *Parm.* 132c-d, *Tim.* 51e-52a; vol. v, 267.

¹ 991a20-23. (In *ἐργαζόμενον* and *ἀπόβλεπον* A. continues the metaphor - with ironical intent?)

² It is worth noting in passing that in the *Soph.* (239e-40a) Plato himself seems to criticize his own earlier view when he attributes to their adversary the Sophist a refusal to recognize the evidence of sight and an insistence on *λόγοι*, making him demand in fact a definition in just the terms used by Socrates in the *Meno*: τὸ διὰ πάντων (cf. *Meno* 74a) ἀ πᾶσι τοῖς εἰσέοις ἐστὶ προσεμμενὸν ὁνόματι φθγγόμενος εἰδῶλον ἐπὶ πᾶσι (ib. 75a) ὡς ἐν ἐν. (Cf. vol. v, 135f.) We also remember how Socrates took refuge in *λόγοι* at *Pho.* 99e.

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for they only confuse me. What I cling to, in a simple, naive and perhaps foolish way, is just this, that the only thing which makes an object beautiful is the Beautiful itself by its presence or communion or whatever you like to call it. I won't be dogmatic about that, but only insist on this, that it is by means of the Beautiful that all beautiful things become beautiful.

The analogy of the Good with the sun in *Rep.* 6 may look more hopeful (vol. v, 506). As the sun not only makes perceptible things visible but is responsible for their birth and decay, so the Good is to intelligibles the cause of their existence as well as their intelligibility. This, however, refers only to the existence of the other Forms; their relation to the sensible world is not in question. Plato's order of reasoning was: we can only account for a sensible object, rescuing it from Heraclitean flux, on the hypothesis that it is related to some changeless and intelligible object. Therefore there must be such a transcendent object, whether or not we can explain the precise connexion between the two. For Aristotle on the other hand, if we cannot understand how a cause works it is no cause so far as we are concerned; we cannot understand the Forms as causes, since they cannot account for *kinēsis*; therefore, as causes, they must be abandoned.

(2) PLATO'S AND ARISTOTLE'S MOTIVE CAUSE: SELF-MOVER AND UNMOVED MOVER

Many dismiss Aristotle's criticism as 'purely captious' (Ross) on the ground that Plato did not intend the Forms to provide efficient causality, which he elsewhere credits to soul or mind. There is no trace of this in the *Phaedo*,¹ but in the *Sophist* (248e-49a) he exclaims, with all the excitement of a new discovery, that one must not exclude life and mind from reality, making it senseless and motionless; and at 265b-c he describes everything in the natural world, animate and inanimate, as the work of 'a craftsman god', which leads us directly to the divine craftsman of the *Timaeus*. This would seem a complete answer to Aristotle's question: 'What does the work, with an eye on the Forms?',

¹ Plato may have believed it, but it is hardly sufficient to quote his attribution of mind as cause to Anaxagoras (Ross, *PTI*, 234; *Pho.* 97b-c). Merlan agreed emphatically that the *Pho.* ascribes causality to the Forms alone (*From P. to IV*, 173), and refers to M. D. Philippe in *Rev. Thomiste* 1949 on 'the almost complete absence of any efficient causality in Plato'.

Plato's and Aristotle's motive cause

were it not, as in Aristotle's eyes it surely was, a 'poetic metaphor' as much as the sharing in, or imitation of, Platonic Forms. Whatever the 'constraint of a soul', rejected at *Cael.* 284 a 27-35, may refer to, Aristotle there pokes fun at the idea that the heavenly spheres should need a soul to push them round as if they were 'heavy and earthy'. The poor soul would be exhausted, without a moment's leisure or even the respite granted to mortals in sleep! In any case, the Demiurge of the *Timaeus* was not the originator of motion in the universe: he only introduced order into it. Before he 'took over' the visible world it was already 'moving with a discordant and unordered motion' (30a).¹

The *Philebus* uses less metaphorical terms.² Reality is fourfold: limit, unlimited, their mixture (i.e. generated substance, 27b), and its cause; and none of these seems to be identifiable with the Forms. Socrates speaks in almost Aristotelian terms of the need for a cause (*αίτια*) if anything is to come to be, and immediately identifies cause with agent or maker (*τὸ ποιοῦν*) and (as in *Sophist*, *Politicus* and *Timaeus*) with craftsman or worker.³ As in the *Sophist* and *Timaeus* also, he is equated with mind. Since Aristotle must have been aware of this, from the dialogues and from Plato himself, it certainly seems unfair that he should write as if Plato never developed the notion of cause further than in the *Phaedo*, especially since he himself identified the First Cause with divine Mind. His concentration on the *Phaedo* is probably to be explained by the deep impression it made on him when, barely at the age of a modern undergraduate, he entered the Academy and fell under Plato's spell (pp. 21f. above). His reaction in independent maturity would be correspondingly sharp. To conjecture further, there may be a clue to his dissatisfaction even with Plato's later views on causality in his joke about a soul getting tired from having to push the heavens around. What offended him could have been the word

¹ It must be remembered that, rightly or wrongly, A. took literally the idea of temporal creation in the *Tim.*, as I do myself. See vol. v, 299-305. Düring (*Arist.*, 210), after quoting A.'s criticism of Plato and the atomists that they speak of eternal motion but do not explain why or what this motion is, adds that this is wrong, because 'Plato explains in detail the movement in the plane of the celestial equator and of the ecliptic.' But neither of these is the eternal motion. (An enthusiastic champion of Plato against A.'s accusations of neglecting the motive cause was R. G. Bury. See his *Philebus*, 1-11.)

² 23 c-d, 26 c-27 c; vol. v, 212-14.

³ τὸ πάντα ταῦτα δημιουργοῦν, *Phil.* 27 b; θεὸς δημιουργοῦντος, *Soph.* 265 c; *Pol.* 270 a, 273 b; *Tim.* 28 a, 29 a, 40 c, 41 a etc.

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demiurgos and its cognates, meaning in ordinary speech nothing more lofty than a skilled workman or artisan. *Demiurgoi*, said Plato himself in a political context (*Pol.* 287d), while indispensable members of the community, have no place in its government. In Aristotle's system there is no question of God exerting himself and taking thought¹ to bring into being a world which, like himself, would be good. To keep the uncreated cosmos in being needs no effort on his part – that would detract from the fullness of his *energeia* – and he remains in fact completely indifferent to its existence or otherwise.

Closer to Aristotle than the semi-mythical (to Cornford and others wholly mythical) Demiurge is the argument from motion in *Laws* to which establishes the priority of rational soul.² A chain of caused motions must have had a beginning (for if the regress were infinite it would never have started), therefore the first motion, cause of all subsequent motion, must be self-caused. But self-caused motion is a property of life (soul, *psychē*) and nothing else. The originator of motion³ must then be soul, and the regularity of the cosmic motions leaves no doubt that, even if bad or irrational souls exist, the soul in supreme control is rational and good. Here is a physical argument based on an analysis of motion and leading to the conception of a self-mover as first cause: self-mover = soul, supreme soul = God. Though the final result was not the same, the reasoning is remarkably Aristotelian. No question here of 'empty talk' or 'metaphor'. Plato's argument is philosophical and deserves a philosophical answer.⁴ Briefly, the difference is between self-mover and unmoved mover. At first sight at least, Aristotle's conception appears only as a slight refinement on Plato's due to his stronger determination to argue strictly as a *physikos*. To the natural philosopher there can, strictly

¹ Contrast λογισάμενος . . . τὸ πᾶν συνεκτείνειν, *Tim.* 30 b.

² A development of that in the *Phdr.*, 245 c–e (vol. IV, 402, 419–21). For a full account of it see vol. V, 361–5. Solmsen has an article 'Plato's First Mover in the Eighth Book of A.'s *Physics*', in *Philomathes* (1971), 171–82.

³ At 895 a, as at *Phdr.* 245 c, Plato uses ἀρχὴ κινήσεως, one of A.'s terms for his efficient cause (e.g. at *Phys.* 198b 1, 253b 6, *Met.* 983a 30, 984a 27).

⁴ A minor objection is raised at *Mer.* 1071 b 37–72 a 3: Plato, says A., is not entitled to call the self-mover the ἀρχὴ because by his own account soul comes later and is contemporary with the present world-order. This, retorts Ross *ad loc.*, is unfair, but neither the world-soul (which is created for the cosmos, though before its body) nor the Demiurge himself is the first cause of all motion. Cf. p. 247 with n. 1 above.

Plato's and Aristotle's motive cause

speaking, be no such thing as a self-mover. The main arguments for this are set out in *Phys.* 8. He first protests, in ch. 3, that to maintain that nothing moves, and be thereby forced to deny the evidence of the senses, is a sign of 'weakness of intellect'.¹ 'This is not', he continues, 'a dispute about detail, but concerns a whole system of thought, not only natural science, but almost every kind of knowledge and belief, since all employ motion... For the natural philosopher it is a basic hypothesis that nature is a motive principle.' In ch. 2 he had briefly met the point that animate beings do seem to move themselves, e.g. get up and walk, without apparently being moved from outside.² This, he says bluntly, is false. Some part or organ of the animal is always in motion, not set in motion simply by the animal itself but in response to an external stimulus, e.g. something in the environment which arouses the mind or the appetites and so initiates the locomotion (the only kind of *kinēsis* which could be attributed to the animal itself). That the soul is not subject to motion, whether self-caused or otherwise, he demonstrates in *De anima*, bk 1 ch. 3, and repeats emphatically in the next chapter (408b30-31).

But the main argument against self-motion is reserved for ch. 5. In ch. 4 (254b30-33) he had gone so far as to say 'It looks as if... in animals too the mover and the moved are separate, and only in this sense does the whole cause its own motion.' However, he starts ch. 5 with the statement that whereas everything in motion must be moved by some agent, the agent may be either the transmitter of a motion received from outside or a self-mover. Probably the chain will contain more than two links, having between the extremities a series of moved movers which act on others because themselves affected by something prior. To extend Aristotle's example slightly, a man takes a stick and hits a stone into a pond. The rippling water, so far as we are concerned, is purely passive: its part is only to be moved. The stone stirs the water because itself propelled by the stick wielded by the hand directed by the man. Such a causal chain, Aristotle argues like Plato before him, must have had a beginning (*archē*) or the motions would never have

¹ Or sickness of mind, ἀρρωστία τῆς τῆς διανοίας, 255a33. So much for Parmenides!

² 253a7-20, no doubt with Plato in mind. Relevant is Solmsen's paper in *Philamathes* (1971), 171-82 (p. 248 n. 2 above).

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started, and this *archē* must need no further mover but possess the power of self-motion. This is his first conclusion, exactly like Plato's (256a 19-21): 'If then everything moved is moved by some agent, and the first mover is moved but not by anything else, it must be moved by itself.'

Nevertheless on further scrutiny of the principle of a self-mover, he feels compelled to make a refinement on it, *viz.* (258a 1, also 256b 21): 'Of the whole therefore [*sc.* which is called a self-mover] one part will move without being moved and another part will be moved. Only in that sense is it possible for anything to be moved by itself.' This point is pursued in mechanical detail in the short work *On the Movement of Animals*, chapters 1 and 2, where, after referring back to *Phys.* 8 for the theoretical basis, he instances joints as providing a static fulcrum for the moving limbs. But, he adds, there must in addition be a wholly unmoved external mover. You cannot, if you are in a boat, move it by pushing against the mast, but only if you are outside and have your feet planted against an unyielding (unmoving) base. He mentions in passing that this applies to the universe as a whole, but for present purposes insists that, in the case of animals, besides an external unmoved mover, there must also be unmoved parts within the creatures, on which the moving parts can rest. In so far as Aristotle relies on arguments of a mechanical type, suitable perhaps for a biological work like *De motu an.*, there is a temptation to doubt the value of this extra subtlety. Might he not have been wiser to give up trying to follow an investigation on mechanical lines into regions where they are no longer appropriate, and agree with Plato that there is a kind of activation, exemplified by the life-force if nothing else, which does not follow mechanical laws and in which a self-mover is not only possible but necessary to explain the phenomena concerned?

For Aristotle, however, there was more at stake.² The guiding

¹ At *MA* 702b 34-35 soul itself is called an unmoved mover. This refers to physical motion, soul being incorporeal.

² Bambrough in *Reason, Truth and God*, 91-7, sets forth with welcome lucidity and fairness the reasons why the belief of A. and others is unjustified, that the universe is incomprehensible without the assumption of an external, transcendent being as its ultimate foundation. This does not apply only to cosmology: similarly 'there need not be, are not, and could not be, any ultimate *ἀπὸ τοῦ* of definition, explanation and demonstration' (p. 95). B. may be right, but would probably not have convinced A.

principles of his own philosophy were already laid down, and his theory of motion was already formulated. It was with these that the conception of a self-mover would have clashed. 'Motion' here translates *kinēsis*, which (to remind) covered four kinds of phenomenon: locomotion, qualitative alteration, change of size, and passage into and out of existence. Of this conception, for which neither English nor perhaps any non-philosophical language has a single word, Aristotle found a general definition in terms of his principles of potency and act. It is 'the incomplete actualization of the movable'. Aristotle recognizes two ways in which something might be imagined to act on itself: it might move itself as a whole, or be in two parts which acted reciprocally on each other, A moving B and B at the same time moving A. The latter notion, according to which there would be no first mover, gives Aristotle little trouble, and he quickly demolishes it with four short arguments (257b13-258a2).¹ The former he refutes as follows (257b2-13):

It is impossible for that which moves itself to move itself *all over* (πάντη), so as to be both carried and carrier in the same act of locomotion, though one and indivisible in form, or both changed and changer. One would teach and be taught at the same time, or enjoy and bestow the same health.² Moreover it has been established that what is moved is the movable, i.e. what is potentially moved but not actually, and the potential proceeds towards actuality.³ Movement *is* the incomplete actualization of the movable. But the mover already exists in actuality. What heats is hot and in general what generates possesses the form imparted. So [*sc.* if anything moves itself] the same thing will be in the same respect both hot and not hot, and similarly in every case where the mover must have the same name as the moved. Within the self-mover therefore something moves and something else is moved. (358a12) Only in this sense is it possible for something to be self-moved.

¹ For the sense in which A. did believe in reciprocal action (ἀντιστρέφειν, of things καὶ ποιητικά ἀλλήλων καὶ παθητικά ὑπ' ἀλλήλων, GC 328a19-21) see J. L. Russell's interesting article 'Action and Reaction before Newton' in *B. J. Hist. Sci.* 1976, esp. pp. 25-7.

² 'A doctor may cure himself, but he does not possess his medical skill *qua* patient; it is accidental that doctor and patient are the same man' (192b23-26, *Met.* 1019a17-18). This is not a case of true self-action, but of one part (his mind with its medical knowledge) affecting another (his body).

³ For δύναμις in this sense cf. the definitions at *Met.* 1019a15-18, 1046a11-13, quoted earlier (p. 125).

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So too in the *Metaphysics*: (1049b24-25, cf. *De an.* 431a3-4) 'From the potential the actual is always produced by the agency of what is actual.' Nothing can move, change or come into being of itself because to do so it would have to be both potential and actual at the same time in respect of the same act of change – a clear breach of the law against contradiction (p. 179 above). But because there is motion (and to doubt this, as Aristotle says, would be pathological), there must be an ultimate cause: an endless retrogression of intermediaries, causing motion because moved in their turn by something else, explains nothing. Only one thing therefore can stand at the beginning of all and constitute the universal *archē*, namely what has the power of initiating motion in others without being moved itself.¹

(3) ARISTOTLE'S UNMOVED MOVER

(a) *Its mode of action*

The chief arguments for an unmoved mover as First Cause were in the *Physics*; the chief account of its nature is in *Metaphysics* Λ, which I would venture to call the most masterly exposition, in lecture-note form, of any left us by Aristotle. It is a short, self-contained *opusculum*,

¹ 258b4-9. This is a form of what is now known as the 'cosmological argument' for the existence of God. For a history of its criticism and defence see Paul Edwards in *Mod. Introd.*, 3rd ed. 1973, 377-85. He, however, makes no mention of A. and writes as if Aquinas were the inventor of the argument. Nor does anyone seem to appraise it in its Aristotelian form, as based on the notions of potency and act. It is attacked again by Ernst Nagel on pp. 463f. of the same book (revised version of an essay in *Basic Beliefs*, ed. J. E. Faircliff). In Nagel's view 'the supposed inconceivability and absurdity of regressive causes will be admitted by no one who has competent familiarity with the modern mathematical analysis of infinity'. A. might possibly have retorted that he was talking of the natural, perceptible world, of which motion is the dominant feature, not of abstract mathematical entities, and have compared his critics to the Pythagoreans, who 'use more far-fetched principles and causes than the philosophers of nature because they did not derive them from perceptibles, and mathematical entities are without motion' (*Met.* 989b29-32).

Coleridge's dream on the subject is at least amusing:

'[The Old Man] spoke in divers Tongues and unfolded many Mysteries, and among other strange Things he talked much about an infinite Series of Causes – which he explained to be – a string of blind men of which the last caught hold of the skirt of the one before him, he of the next, and so on till they were all out of sight; and that they all walked straight without making one false step. We enquired Who there is at the head to guide them? He answered No one, but that the string of blind men went on for ever without a beginning, for though one blind man could not move without stumbling, yet that infinite blindness supplies the want of sight. I burst into Laughter at this strange exposition and awoke.' (Coleridge, *Select Poetry and Prose*, ed. Stephen Potter, 429; not previously printed.)

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falling into two parts. Chapters 1-5 give a brilliantly concise summary¹ of his physical theories ('the *archai* of sensible substances, what and how many there are and their mutual relationships', 1071b1-2), as introduction to chapters 6-10, which start with the statement that motion, like time, always has been and always will be.² Without time there is no 'before' or 'after' and both motion and time are continuous. Time indeed is either the same thing as motion or an attribute of it. This everlasting motion is circular locomotion, since every other kind is between opposites and cannot therefore be continuous.³ It follows that there must be, and always have been, as mover, a substance whose very essence is actuality, without admixture of matter which is potentiality.⁴ The priority, chronological as well as logical, of act to potency, demonstrated in *Phys.* 8.5, is here defended against 'men like the Pythagoreans and Speusippus' who not surprisingly took the view that seed precedes flower, the embryo the man. On the contrary, an adult plant or man is needed before seed can be produced or conception take place.⁵

So far he is simply repeating or amplifying the arguments of the *Physics*. He now goes on to ask whether we can point to anything in our experience which answers to the definition 'unmoved mover', and answers: yes, if we turn as Plato did from the lifeless to the living world. Plato found in soul, or life, the self-moving principle that he sought: Aristotle found his in an equally undeniable fact of experience, the

¹ Krämer (*Theol. u. Philos.* 1969, 376 n. 52) explains the *Knappheit* of the whole exposition by supposing it a résumé of a detailed treatment of A.'s theology in the dialogues, especially *De philosophia*. But it is by no means certain that when he wrote that work A. had already evolved the doctrine of the Unmoved Mover. (See additional note, p. 262 below). More likely is Jaeger's explanation (quoted by K.) that the book consists of lecture-notes and 'everything is left to the oral exposition'.

² This was demonstrated at greater length in *Phys.* 8 ch. 1. That A. and his contemporaries had not discovered Newton's first law of motion does not to my mind make his train of thought less interesting, even apart from its enormous influence on later centuries.

³ Proved in *Phys.* 8, chh. 7 and 8, and stated at *Met.* 1071b10-11. See Ross, *Metaph.* II, 369.

⁴ ἢς ἡ οὐσία ἐνέργεια . . . ἀνευ ὄλης, 1071b20-21. Otherwise, though now actual, it could relapse into the potentiality from which it must have come. This is a reason for accepting the effective and well-attested nominative ἐνέργεια at line 22 rather than von Christ's ἐνεργεῖα.

⁵ 1071b30-73a2. This is not just a pointless hen-and-egg controversy. A.'s point (against philosophers like Empedocles, whom he names at *PA* 640a19) is that the direction of development is not at the mercy of chance, but determined by the nature of the parent. Cf. *PA* 640a24-26: 'The parent is prior to the progeny in time as well as in form (λόγῳ). Man begets man, and it is the parent's character that determines the development of a particular offspring.'

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phenomenon of desire.¹ It is true that a person or animal (or even, though he does not mention it, an inanimate object of value) can originate a series of actions on the part of another while remaining completely unaffected and it may be unaware of the other's existence. This, being observable, is *prima facie* a rational proposition and not a leap into 'poetic metaphor'. Nor of course did he level that accusation against Plato in the matter of the self-mover, but only when he appeared to regard as active causes the transcendent Forms, importing the 'empty' notion of imitation or sharing. His own doctrine is a simple universalization of the psychology of the *De anima* (3, 10). There too the causes of an animal's movement lie in desire and thought, aimed respectively at the apparent and the real good, and four factors are involved: (1) an unmoved mover (in this case an attainable good, such as nourishment), (2) a moved mover (the desire aroused by (1)), (3) the bodily organ or instrument of motion, and (4) the object moved, i.e. the animal.

Ch. 7, 1072a 19ff. Since this is possible, and if it is not true the world will be the product of night and 'all things together'² and non-existence, this may be considered settled. There is something in everlasting, ceaseless motion, which is circular – as is plain not only in theory but in fact – so that the first heaven must be eternal. There is also therefore something that moves it; and since what moves and is moved is an intermediary, there exists also something which moves without being moved, and is eternal, a substance, and actuality. Now the objects of desire³ and thought move in this way, without being moved. The primary objects of both are the same, for the object of irrational desire is the apparently good, and of rational desire the truly good . . . It moves then as the object of desire,⁴ and through what it moves moves⁵ everything else.

¹ The resemblance between A. and Plato here may be very close. Cf. Cornford, *Princ. Sap.*, 80, speaking of soul as self-mover in the *Phaedrus*: 'The soul is defined as the only thing capable of moving itself, and hence the source and fountain of all motion in the universe. The whole context seems to imply (though this is not explicitly stated) that the moving force in the soul is desire, Eros; for desire is the type of motion which reaches forward to its object and is not pushed from behind by an antecedent mechanical cause.'

² A reference to Anaxagoras. See his fr. 1 DK II, 272.

³ ὁρεκτόν. For the psychology of ὁρεξις see *De an.* 3 ch. 10, *MA* 700b 35–701a 1. It is a wide term including both unreasoning and reasoned desire (βούλησις καὶ θυμὸς καὶ ἐπιθυμία, *MA* 700b 22), but confined to creatures possessing at least sensation (*De an.* 414b 1–2). On its manner of working, as a biological phenomenon, see Peck, *GA* (Loeb ed.), App. B, 576–8.

⁴ Not ὁρεκτόν now but ἐρώμενον, using Plato's word for 'love'.

⁵ I.e. the outermost heaven carrying the fixed stars. Ross in his ed. (but not in his earlier translation) conjectured κινουμένη for κινούμενον, but this does not seem necessary.

Aristotle's Unmoved Mover

The obvious objection was made by Aristotle's pupil and colleague Theophrastus: 'Since impulse (*ἔφεσις*), especially towards the good, involves soul, then unless one is talking in simile or metaphor, the things moved must be alive.' Aristotle himself (assuming the *EE* to be his) asked rhetorically, 'How could one suppose there is desire in lifeless things?'¹ This question must be taken seriously, though it should be noticed that the influence of the first unmoved mover is directly exercised only on the outermost sphere of the fixed stars. The other celestial spheres have their own movers, and the endless cycle of terrestrial birth and decay is directly caused by the motion of the sun in the ecliptic, and only at many removes by the primary motion.

In his biological works Aristotle warns us more than once, with a scientist's caution, that the line between living and lifeless is not easy to draw from observation of particular cases, and emphasizes the continuity of nature.² Generally speaking, however, the line can and must be drawn. He defines it clearly at *De an.* 412a13: 'Of natural bodies some have life and some have not. By life I mean the power of self-nourishment, growth and decay.' The definition includes plants as well as animals, but nothing lower in the scale.³

What then did Aristotle consider to be alive or 'ensouled' (to translate his own word *empsychon* literally)? Certainly the outermost celestial sphere, which carries the fixed stars and responds directly to the first unmoved mover's influence.⁴ It and the planetary spheres have

¹ Theophr. *Met.* 5a27 Usener, ed. Ross and Forbes, p. 8; Arist. *EE* 1218a27-28. Thomas Gould and J. M. Rist (see the latter in *TAPA* 1965, 337f.) have drawn attention to the fact that in the *Phaedo* (only) Plato already spoke of sensibles as 'striving' or 'eager' (*ἐπύετο*, *προθυμύτοι*) to be like the Form, but in that dialogue he certainly did not shrink from a conscious use of metaphor, and this was probably intended simply as another metaphor for *ψυχὴς* or *αἰσθεῖς*.

² For passages illustrating this most interesting point, see pp. 288ff. below. Rist makes much of it as evidence that for A. the whole natural world is 'quasi-lifelike'; 'there is some sort of soul-substance present in all matter' (*TAPA* 1965, 341). The question is difficult (and belongs to ch. xiv), but it must not be forgotten that *ἐμψυχα* and *δυσυχα* are freely and expressly contrasted by A., and the distinction is important to his natural philosophy. See next note.

³ Cf. 413a25-31. Apparently a development since the earlier *Protrepticus*, which made sensation the criterion for distinguishing living from non-living. See pp. 76f. above, but cf. also p. 256 below. At *De an.* 403b23 the criteria are *kínēsis* and sensation; 434a22-25 adds the ability to absorb nourishment, and *De sensu* 436a18-19 the conditions of health and disease. At *Phys.* 255a5-7 self-motion is peculiar to the living. Living things can still of course be spoken of without inconsistency as self-moving or possessing an internal *ὀρχή κινήσεως* although an unmoved mover is necessary to sustain the whole cosmic system in being.

⁴ 'The heaven is alive and has its own source of motion' (*Coel.* 285a29-30, ὁ δ' οὐρανὸς ἐμψυχός

souls in the purest type of body, the *aither*, subject to circular locomotion but no other form of *kinēsis* (1069b24-26), and therefore nearest to the perfect actuality realized in God alone. Individual stars are apparently not alive, for they do not move of themselves.¹ 'The circles move, and the stars stay still and are carried round because fixed in the circles' (289b32-33). This motion is neither animate nor enforced, but resembles that of a ship carried along by a stream.² Men and animals too can experience desire (they have τὸ ὁρακτικόν), which in *De anima* (2.3 *ad init.*) and elsewhere is attributed to the sensitive and higher souls, but denied to those whose vital powers are limited to growth and reproduction, i.e. plants,³ although having life they are capable of seeking and absorbing nourishment. If then we press this strict division and apply it to the metaphysical desire which is the motive force behind all nature, assuming Aristotle to be speaking literally and not analogically,⁴ we may see some justice in Theophrastus's remark so far as plants and inanimate nature are concerned. However, the knowledge we already possess about Aristotle's mental habits may shed some further light on the path that led him to this conclusion.

In the first place it resulted from the tentativeness of his approach

καὶ ἐξ αὐτῆς κινήσεως ὁρακτικόν). The prime mover is not strictly speaking ἐμψυχον, an adjective applied to bodies or to the whole living being comprising body and soul. (A ζῷον is σῶμα ἐμψυχον, *GA* 738b20). The prime mover, being incorporated, does not so much *have* life, though that expression is also used; rather he *is* life: ἡ γὰρ νοῦ ἐνέργεια ζῶν, ὁ αὐτὸς δ' ἡ ἐνέργεια. (*Met.* 1072b26-27.) ('he': it is about now that A. himself changes from neuter to masculine, and τὸ κινουόν becomes ὁ θεός.)

¹ *Conf.* 291a27. This I believe to represent A.'s mature view, but on the question whether the stars themselves are ἐμψυχα he seems to have found it difficult to make up his mind. They are made of the same divine substance, *aither*, as the sphere which carries them round (289a11-19). 291a21-22 reads as if it is the stars that are περιέχοντα προσέως, καὶ ζῶντες, and at 282b2 he speaks of τῶν τῶν ἀστέρων πρὸς, which is 'such as' (τοιαύτην διὰ) the actions of animals and planets. On the other hand, bk 2 ch. 8 of the same work is entirely devoted to demonstrating that the stars do not move themselves but are carried passively round by their spheres. Several fragments of *De phil.* testify that at the time it was written the stars were living and divine, and there is some evidence that at this early stage he attributed sight and hearing to the stars. Being eternal they did not need the other senses, whose function is to preserve life. (See fr. 24 Ross, and cf. fr. 25, *Plut. De mus.* 1140a-b.)

² 291a23, 11-12. A. is refuting the Pythagorean contention that the movements of huge bodies like the planets cannot be noiseless. This would only be true if they were forced through a stationary medium. As it is, the medium itself is in motion and carrying them round. For the Pythagorean theory of the harmony of the spheres, see vol. 1, 295-301.

³ 'Plants are alive, though incapable of locomotion or sensation' (*De an.* 410b23-24), and so often. Further ref. on p. 282 n. 2 below.

⁴ The ὡς in ὡς ἡρώμενον is ambiguous. 'As being an object of love', or 'like', 'similarly to' such an object?

(on which see pp. 90-2 above). He reached the notion of an unmoved mover by what in his eyes was a piece of strictly inductive reasoning (starting-point: it is a fact of experience that things move and change). Having reached it, he must suggest some way in which it might work. One could of course fall back on a frank admission of ignorance, like Plato, who offered three possible explanations of the action of his own first cause, the self-mover, of which the third was that it might possess 'some exceedingly wonderful powers'. But to Aristotle it was no use assuming a cause whose working was incomprehensible. A single explanation must be suggested. Physical contact is obviously excluded, and in the idea that the psychological phenomenon known as 'reaching after' or desire provided the only possible means, Aristotle was simply suggesting that something universally familiar might have a larger place in the cosmic scheme than had been thought;¹ but it is an extension, which to Theophrastus seemed illegitimate. Is there any reason why Aristotle in particular should have been tempted to make it?

The main effect of his philosophy of motion, change and becoming has been to *unify* the forces operative in nature.² A single principle stands at their head, whereby the force activating things *a tergo* has also been reduced to one. Hence what, strictly speaking, operates only in living creatures appears as behind all nature whether animate or inanimate. Now in the first place such a simplification would be especially attractive to a teleologist. 'All that is done by nature as well as by thought is for some end' (*Phys.* 196b21). Secondly, the internal activating principle required was ready to hand in *dynamis*, which along with teleology has been singled out for early treatment in this book as

¹ Cf. the last clause of the extract from Cornford quoted on p. 254 n. 1 above.

² As every scientist must try to do, 'the very essence of scientific explanation being the analysis of more complex phenomena into simple ones' (Niels Bohr, *Atomic Physics and Human Knowledge*, 3). Von Weizsäcker speaks of 'the endeavour of physics to achieve a unified world-view' (*World View of Physics*, 30), and a cosmological work published in 1960, by R. O. Kapp, bears the title *Towards a Unified Cosmology*. This book affords an interesting comparison between ancient and modern. Written, as the author says, purely from the point of view of physics, it deals only with the action of matter (meaning of course body, A.'s *σῶμα*, not *ὄλη*) on matter, but in an epilogue he insists that this method, applied to the whole of reality, does not lead to a materialist philosophy. His final question is: Is the kind of order that we observe in the organic world imposed on matter by other matter or is it imposed on matter by non-material influences? And his answer (the last words of the book): 'The true inference from what has been said here is that the kind of order observable wherever things are touched by life must be attributed to the action of non-material influences.'

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one of the foundations of Aristotelian philosophy. It is a drive or tendency towards fuller realization of being (form), inherent in every natural object and identified with matter, which is not the contrary of form (that is *sterēsis*) but 'something whose essential nature it is to desire and reach after the good, divine and desirable'.¹ Here if anywhere was Aristotle likely to ignore the distinction between living and non-living. In sentient beings this internal drive may (though it often does not) take the form of conscious desire. In inanimate nature it cannot strictly be so called, but it is not confined to organic beings. If *dynamis* (also called *physis* in one sense of that overworked word) is the impulse in a foal to become an adult stallion, an acorn an oak, it is none the less what causes the stone to fall and the flame to rise; for according to Aristotle motion towards their natural places is progress from potentiality to form or actuality.² In fact he might reply that criticism on the lines of Theophrastus is irrelevant pedantry, though he has only himself to blame for any misunderstanding. All natural objects, as distinct from artificial (bed and cloak are his examples), down to the simple bodies which are the elements of everything else,³ contain within themselves a source of motion and rest, for nature herself is such a source (p. 119 above).

This does not conflict with the requirement of an external cause, for as he states plainly in the *Physics* (255b29-31), nothing can move itself because the internal source, or 'nature', is simply a power of response, a potentiality, not itself an efficient cause.⁴ The internal drive which Aristotle detected in all natural products towards achieving their own proper form and activity is now seen as an endeavour to emulate, so far as the limitations of their matter will permit, the one pure form whose perfection is unsullied, and its effortless activity unimpeded, by any taint of matter at all.

The mind which reached these conclusions, even if tisking a charge of inconsistency, was neither trivial nor entirely unscientific. Indeed

¹ *Phys.* 192a16-25. For teleology and *dynamis* see ch. vii; identity of matter and the potential, pp. 123f; the concept of *sterēsis*, pp. 104, 121-3.

² *Cael.* 310a20-23, 33-b1.

³ And none of which owes any power to soul. (*GA* 736b29-31, *Phys.* 255a5-7, *De an.* 411a14-15.)

⁴ ἀρχὴ τοῦ πάσχειν 255b30-31, and cf. the use of ἐνέργεια and δύναμις at 230. A. can still say τὰ ἀψυχα πάντα κινεῖται ὑπ' ἐτέρου (*MA* 700b6).

Aristotle's Unmoved Mover

Aristotle's meticulous biological investigations, especially of marine life, may have played a large part in their formation by bringing home the difficulty of detecting where the divisions come in nature between living and non-living (pp. 288f. below). At least one modern biologist agrees. W. H. Thorpe writes: 'To sum up, it seems to me that over recent decades biology has been adducing most impressive new evidence for the unity of the cosmos.' This, he adds, is because biology does not afford an absolutely sharp distinction between living and non-living or between man and other animals.¹

(b) His character

God is happy and blessed, not through any external good but
in himself and because of his own natural character.

Aristotle, *Politics* 1323b24-26

The first Unmoved Mover is God. That a philosopher should so designate the primary cause of the universe calls for no comment; but the word 'God' – or *theos* – has associations and arouses certain expectations. Aristotle with his respect for widely held beliefs was not indifferent to these expectations. Anthropomorphic and theriomorphic gods indeed he could not stomach. They belong to the 'mythical accretion designed to cajole the *polloi* and serve the interests of law and utility . . . but if we strip this off and take the central fact alone, that they called the primary substances gods, it may well be thought god-inspired'.² Comment is sometimes evoked by the abrupt transition from the description of God as unmoved mover to the statement that his activity is thought, linking him at once to the highest faculty in

¹ W. H. Thorpe, *Biology and the Nature of Man*, 89. Yet we do not give up the term on that account. Perhaps A. felt like Sherrington (*Man on his Nature*, Pelican ed., 86) that 'The word "life" still remains useful, a convenient, though not exact, term.'

² 1074b3-10, cf. *Cael.* 284a2ff., *Pol.* 1252b26-27. In *Met.* B, 997b9, he compares believers in Platonic Forms to those who imagine gods in human shape. As the latter simply invent eternal men, so the Platonists fabricate eternal sensibles. That A. himself attributes to God the best activity of man (or rather calls the mind a divine element in ourselves, pp. 319 and 391ff. below) can only at a stretch be called anthropomorphism. Rist (*Eros and Psyche*, 16) says strangely that if Xenophanes had lived after A. he would have been perfectly justified in making the same criticism of the Aristotelian as he did of the Olympic god (though X.'s own god had sight and hearing as well as thought). C. S. Peirce, anticipating that his cosmogonic ideas would meet with criticism as being in anthropomorphic terms, 'rounds on it boldly, in many passages, with the retort that we can never hope to avoid some degree of anthropomorphism in our explanatory conceptions'. (Gallie, *Peirce and Pragmatism*, 222.) This is surely true.

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man. He had of course Plato and Anaxagoras before him as models,¹ but he could also have wished to grant as much to the religious instinct as was compatible with the preservation of his intellectual integrity.² One can imagine an *aureum flumen* of Platonic eloquence based on the following memorandum (1072b 13-30):

On such an *archē* depends the universe and nature. His life is like the best which we enjoy for a brief spell. He is always in that state (which for us is impossible), for his activity is also pleasure.³ That is why waking, sensation, thought are the pleasantest part of life, and through them hopes and memories. Thought in itself is of what is in itself best, and the purer the thought the more truly best its object.⁴ Now mind thinks itself by sharing the nature of its object: it becomes object of thought by contact⁵ and the act of thought, so that mind and object of thought are the same. That which is capable of receiving the object of thought, is mind, and it is active when it possesses it.⁶ This activity therefore rather than the capability appears as the divine element in mind, and contemplation⁷ the pleasantest and best activity. If then God is for ever in that good state which we reach occasionally it is a wonderful thing – if in a better state, more wonderful still. Yet it is so. Life too he has, for the activity of the mind is life,⁸ and he is that activity. His essential activity is his life, the best life and eternal. We say then that God is an eternal living being, the best of all, attributing to him continuous and eternal life. That is God.

Ch. 9 begins with the admission that though we think of the first

¹ At *Phys.* 256b 24-27 he praises Anaxagoras for saying that νοῦς, if it is to be the ἀρχὴ κινήσεως, must be ἀκίνητος καὶ ἀμείγρτος; 'for it could only move by being unmoved, and have control by being unmixed'.

² True, it was not much. But even Henry Jackson admitted, in the stately language of his generation, that 'this notion [i.e. that supreme mind is continuously operant] moves the austere Stagirite to an unwonted enthusiasm'. (*J. Philol.* 1920, 200.)

³ A contradiction of Plato *Phil.* 33 b. The basis of God's enjoyment, and at the same time the difference between motion as process and actuality (or activity, *ἐνέργεια*) as the outcome of motion completed, are well brought out in the *Ethics* (*EN* 1154b 26-28): 'Wherefore God enjoys for ever one simple pleasure. Activity is the outcome not only of motion but of immobility, and pleasure resides rather in rest than in motion.'

⁴ This represents καὶ ἡ μέγιστα τοῦ μέγιστου. It is a pity that the flavour of this passage as a tightly-compressed joting is not more readily reproducible in English.

⁵ θιγγάνου. For θιγγάνειν as a mode of apprehension cf. 1051b 24 with Ross's note.

⁶ This sentence, difficult to translate, is only comprehensible in the light of A.'s general theory of the process of thought outlined in *De anima*, as will be explained in a moment.

⁷ The stock translation of *theoria*, for which it is extremely difficult to find an English equivalent. It is the activity of the philosopher, pure speculative or scientific thought, entirely theoretical with no ulterior practical motive. Cf. Additional Note on pp. 396ff. below.

⁸ ἡ γὰρ νοῦ ἐνέργεια ζωὴ (1072b 26-27), a splendid avowal of the philosopher's credo. With this passage should be read *EN* 10, ch. 7.

Aristotle's Unmoved Mover

Unmoved Mover as the most divine¹ being we know, the conditions which make him so present some perplexities. Consideration of these leads to the conclusion that the only object of his thought must be himself. No concessions here to religious feelings: any idea of divine providence is excluded. Eternally active, he thinks continuously, not like a sleeper with only the potentiality of thought; and his thought must be not of any chance object but only of what is best and most worthy, and moreover (a more philosophical point) of what is unchanging. Change in the object would imply change in the thinker, according to Aristotelian psychology, in which thought is an assimilation of mind to object, but change is a form of *kinēsis* which implies potentiality, and in any case God is by definition unmoved and unchanged. What is best and does not change can only be himself. 'He thinks of himself, therefore, and his thought is thought of thought.'²

Having reached this conclusion, Aristotle proceeds characteristically to test it. How can this be? Surely knowledge and thought, like opinion and sensation, are primarily of something else, not of themselves. To show up this notion as insufficiently precise needs no new arguments, only a reminder of his general theory of the processes of sensation and thought. Here as often he has found philosophers maintaining opposed theories and tries to show that both are incomplete. For Empedocles and his followers sensation was due to contact between similars, because sense-organ and sensum were made of the

¹ *θεός* is used in both its comparative and superlative forms, which suggests a slightly different connotation from the English 'divine'. Some examples are *GA* 731b24 and 26, *De an.* 408b29 (comparative); *PA* 686a29, *Met.* 983a5, *Pol.* 1289a40 (superlative).

² Düring has joined a long line of interpreters who shy away from Aristotle's plain but distasteful portrayal of a deity wrapped in eternal self-contemplation. Because thought is the same as the object of thought, he says, therefore thought is 'in some measure' the totality of things (*Arist.*, 47: 'Daher ist das Denken gewissermassen die Gesamtheit der Dinge'). The force of 'gewissermassen' is not obvious, but if 'the totality of things' includes this world of change and movement, A. has given his reasons why it is impossible that the supreme mover should pay any heed to that. God is not ignorant in the sense of lacking knowledge, as Brentano among others says: rather he is above it. (Cf. *EE* 1248a28-29.) Anscombe too (*Three Phils.*, 59) finds the idea of self-thought 'exquisitely absurd', and believes that A. found it so too. The passage is 'dialectical', and she proceeds to give us A.'s own conclusion - one for which I see no evidence in the text. Allan (*Phil. of A.*, 119) mentions others who, from Alexander of Aphrodisias to H. H. Joachim, have tried 'to mitigate the obvious sense of the text'. In my view the best case for this thesis, that 'that which is the principle of everything knows everything by knowing itself,' is the one which has been made with such passionate earnestness by Brentano (*Psychology of A.*, 126-32).

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same elements; for others, like Anaxagoras, it occurred because the two factors were mutually opposed.¹ Aristotle explains sensation and thought as *assimilation* by the *psychē* of the form (sensible or intelligible as the case may be) of something without its matter. ('Intelligible form', as we know, is its definable essence.) Now taking on a form is the actualization of a potency, involving a change in what is informed. In other words the mind when thinking of something *becomes* that thing in so far as it is object of thought.² In the physical world we do not identify thought and its object because there remains the material element which of course the mind does not absorb. God, however, as the perfect being, is pure actuality. Hence the object of his thought (himself) has no matter, and therefore only intelligible form. If the human mind in the process of thought takes on the intelligible form of its object, the identification of thought and object is in this case complete, without remainder. Add the fact that the act of thought is eternal, and the last trace of distinction between thought and its object vanishes; their essence is for ever one.³

ADDITIONAL NOTE; THE DEVELOPMENT OF ARISTOTLE'S THEOLOGY

In accordance with the policy set forth on pp. 4-14, I shall not here re-examine the question of possible stages of development in Aristotle's theology between the self-moving soul of Plato and his own mature doctrine of an unmoved mover as first cause. The main point at issue is whether Aristotle had already reached the concept of the unmoved mover when he wrote *De philosophia* and *De caelo*. Bound up with this is the question whether, until after that, the *quinta essentia*, or *aither*, was, as a Platonic self-mover, the supreme being. As to that, I am inclined to maintain the main thesis of my introduction to the Loeb *De caelo*, pp. xv-xxix, that the conception of an unmoved mover was absent from both *De philosophia* (with apologies to Tarán; see *Gnomon* 1974, 138 but contrast Moreau, *A. et son école*, 23f.) and, originally, *De caelo*; but of course much has been written since then, some of it in agreement and some not, and it cannot be said that unanimity has

¹ Empedocles fr. 104 DK (see *De an.* 404b8-18), Anaxagoras A 92.

² In *De an.* (431a1) we have τὸ δ' αὐτὸ ἐστίν ἢ κατ' ἐμπύκνιν ἐπιστήμη τῷ πράγματι, and similar language recurs with reference to the unmoved mover at *Met.* 1074b38-75a1.

³ This point has been made in vol. v, 261f., and anticipates ch. xiv. I hope this amount of repetition does not need apology. The reader has been warned (p. 100 above).

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been reached. Good examples of later treatment are Ross's edition of the *Physics*, 94-9, and relevant sections of Berti's *Primo A.*, ch. iv, on *De philosophia*; and a number of relevant references are to be found in the long n. 47 on p. 73 of J. Mansfeld's *The Pseudo-Hippocratic Tract π.ἑβδομάδων*, and adjacent notes and pages. It is surprising that so many of those who maintain that Aristotle had already advanced to the conception of an unmoved mover as first cause when he wrote *De caelo* (e.g. Cherniss, *ACPA*, 595, Berti, *Primo A.*, 355f., Düring, *Arist.*, 86) fail to mention the revealing embarrassment of Simplicius on reading of 'the foremost and highest divinity' that it ἀπαυστον κίνησιν κινεῖται εὐλόγως, a statement in conflict with the idea of an unmoved mover. See *Cael.* 279b1 and *Simpl. ad loc.*, p. 291 Heiberg (noted in Loeb *Cael.*, xxi). The reference in *De philosophia* to the two senses of οὐ ἕνεκα (p. 86 with n. 2 above), appealed to by Bernays, Berti and others, is surely not decisive, if relevant at all.

J. Longrigg in *CR* 1970, 173, argues that even the *aither*, as a fifth element with its own eternal natural circular motion, is a conception that had not occurred to Aristotle when he wrote the *Physics* (except possibly bk 8) and *De caelo* bks 3 and 4. This is highly improbable, as the historical remarks about *aither* in vol. v (see index under 'fifth element') have, I hope, shown.

(4) UNITY IN THE ARISTOTELIAN UNIVERSE

Observation shows that nature is not episodic, like a bad tragedy.

Met. 1090b19-20

Aristotle's system has appeared primarily as an attempt to depict the world as an organic unity, with everything in it converging towards one purpose and one goal; and in the form in which we have now left it, it most nearly approaches this conception. It is worth pausing to ask in what sense that was his aim and how near he came to success. Omitting ch. 8 for the present, *Met. A* presents an epitome of the theory of motion leading to the postulate of the divine Unmoved Mover in ch. 6. The rest describes the nature of God, his own activity and his relation to the world. The unity resides simply in this, that everything in the world is trying to realize – and where appropriate perpetuate – its own form and perform its proper activity. This is its response to the stimulus of God's existence and imitation of him within the limits of its own material nature. 'Everything reaches towards the divine, and

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with that in view performs its natural functions.¹ So we have the *aither* engaged in perpetual circular motion and the philosophic man in thinking. This is in each case accounted for satisfactorily, though to connect them, at least from Aristotle's express words, is not so easy. God is perfect and eternal mental activity, *aither* is the most nearly perfect material substance, therefore its activity is perfect and eternal physical activity, which can only be circular motion. Man is mind trammelled with matter; the mind is his form and the most divine thing about him;² therefore his proper activity consists in the exercise of mind, though the presence of matter prevents it from being perfect and continuous. So far so good. Yet *aither*, it would appear, is more divine than man, for its matter is so far actualized as to be free from birth and decay. It is eternal and unchanging, man is not. It would be strange then if the proper activity of man is intellectual and that of *aither* physical. How far has the *aither* mind?

Circular motion and thought would at least be connected in Aristotle's mind as they are not in ours. In the *Laws* and (especially) *Timaeus* Plato draws a striking analogy between the regularity of circular motion and the unchanging activity of thought, directed (unlike sensation) to a constant and unchanging reality. It seems indeed more than analogy. The *Timaeus* teaches that the circular motions of the stars and planets are the physical expression of the working of the world-soul, or mind, which moves them; and moreover that similar motions going on inside our own heads are responsible for our own more limited capacity to reason. The comparative irrationality of infants is due to a disturbance of the soul's regular revolutions, caused by the shock of birth into a material body.³ These Platonic notions evidently influenced Aristotle greatly, and an understanding of his difficulties is helped by a reading of *De caelo*, which shows that at one period two incompatible conceptions of *aither* were contending in his mind: the Platonic view of it as possessing soul with

¹ *De an.* 415b1-2, with special reference to reproduction, which is φυσικώτατον for all living things. The language still echoes the *Phaedo*: cf. πάντα γὰρ ἐκίνου τι ὁρᾶται τοῦ δ' ἐστὶν ἴσου (75b) with A.'s πάντα γὰρ ἐκίνου [sc. τοῦ θεοῦ] ὁρᾶται. τὸ θεῖον has taken the place of the Forms.

² *EN* 1179b30-31, *PA* 686a28-29. See also pp. 391ff. below.

³ See vol. v, 96 n. 3, 297, 300, 305f., 310f.

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all its faculties, a real god, and his own attempt to fit it in as a physical element like the other four, with a motion equally due to natural causes.

Below the heavenly bodies and man comes the rest of organic nature. Here the attainment and perpetuation by each individual of its specific form, and its subsequent decay, are also ultimately dependent on the First Mover, through the eternal circular motion of the fixed stars and, proximately, that of the sun in the ecliptic which brings about the cycle of the seasons (*GC* 2 ch. 10). Reproduction as well as its own actualization belongs essentially to the *ergon* of the individual because for Aristotle what mattered was the preservation of the species (*eidos*). The decline and death of the individual – the inevitable consequence of its realization in terrestrial matter – is comparatively unimportant.¹ Each animal and plant must realize its own specific form (*eidos*), a different one for every species (*eidos*), so that to speak of nature as a unity is to speak only very generally, or as Aristotle also puts it, analogically. 'Causes and principles are in a sense different for different things, but in another sense, speaking generally and analogically, they are the same for all.'² It remains true that all this variety of generation and growth depends ultimately on the existence of the Prime Mover, and that for each thing to realize its own form, the good for itself, is to imitate God in its own way. The chapter ends: 'Further there is, besides these [the internal principles of change], that which as first of all things moves them all.'

This chapter shows that Aristotle appreciated the difficulty of asking people to think of the whole natural world as organized on the same principles and working towards the same end. To imagine everything as arranged along a single *scala naturae* is attractive, but not easy to reconcile with the evidence. The world is full of a motley host of creatures all trying to realize and pass on their own specific forms, and these forms it would be difficult to arrange along a single scale of lower

¹ *De an.* 415a25–b7. This is the only kind of immortality possible for mortal creatures. For comparison with Plato's *Symposium* see vol. IV, 387f.

² *Met.* A 4, 1070a31–33. This is the subject of the whole chapter. One could, says A., say that there are three universal *archai*, form, *sterêsis* and matter, but these are different in different kinds, e.g. for colour, black, white and surface. (A. regarded all colours as formed from a mixture of black and white, *Phys.* 188b24, *De sensu* 439b18ff.) 'The whole discussion is obscured by failure to distinguish clearly between colour and luminosity' according to Mure, *Arist.*, 105 n. 2.

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and higher with God at its head.¹ Now Aristotle was particularly sensitive to the charge of making his theories of nature dependent on abstract argument rather than observation, *logika* rather than *physika*. He therefore devotes the last chapter of this book to the question: how strictly should we interpret the statement that the whole universe is subject to a single order? Or, as he puts it first, in what way does it possess the good? Two things may be spoken of as the good for the world: first, the final cause, a perfect being existing separately from it, in imitation of which all its processes go on, as the inward urge responds to the perfection without; secondly, the orderly motions within it, resulting from this influence of the supreme being upon it. In this way it results that the good for the universe is not only a transcendent being but also immanent in it, and that without detracting from the lofty isolation of God by making him in any sense descend within it himself.²

He goes on to describe how the internal order manifests itself. Everything – fish, fowl or plants – is co-ordinated in a way (*πῶς*), that is, with reference to a single end (*πρὸς ἓν*), but this does not impose a rigid uniformity (*ἀλλ' οὐχ ὁμοίως*). Once again he resorts to simile. A household³ is organized for a single purpose, but the master and his family with their responsibilities follow for the most part a prescribed way of life, from which they have far less freedom to deviate than the

¹ With wide enough genera it could be attempted (see Ross's eleven classes in his ed. of the *PN*, p. 52), but hardly with species. Limpet – monkey – man, perhaps; but dog – horse – lion?

² This passage is, it would seem, easily misunderstood. Thus Mure wrote (*Arist.*, 173): 'God, then, it would seem, is immanent as well as transcendent.' To show that he is not, A. uses another simile, contrasting the internal order of an army with the commander who imposes it, obviously regarded for this purpose as distinct from the army, which takes its order from above. ('He does not depend on the order, but it on him', 1075a15.) Otherwise the simile would not illustrate the point at issue, that the good for the world is both its internal order and something 'separate and by itself' (*καχωρισμένον τι καὶ αὐτὰ κατ' αὐτό*, 1075a11–13). Ross (introd. to *Metaph.* 1, ci) thought that the similes of the army, and that of the household which follows it, made it 'difficult not to suppose that Aristotle is thinking of God as controlling by his will the main lines of development of the world's history'. To avoid such a complete contradiction of the immediately preceding chapter should not be difficult for anyone aware of A.'s practice of taking only what he needs from a simile and discarding its other features. To adopt a fence-sitting attitude may possibly be right, but I feel that the sublime indifference of the Prime Mover is too deeply embedded in A.'s fundamental philosophical principles for him to have modified it in any way. This does not make the Mover any the less a 'regulative force' (Verdenius, *Phron.* 1960, 62).

³ The Greek *oikos*, usually translated 'household', would often be better rendered 'estate', including farmland and the labourers on it.

The subordinate unmoved movers

slaves and cattle, who – or which – have little to contribute to the common good. For that reason their behaviour exhibits more of the random and contingent.

To supplement Aristotle's simile with another, it may be helpful to compare his universe to a ship (preferably an old-fashioned steamship) under way. Going down to the engine-room one would see some wheels or discs turning regularly, others sliding eccentrically, pistons lunging to and fro and so on – many different motions inextricably interconnected causally. On deck one finds the crew, some no doubt engaged in jobs of obvious significance and importance, but others off duty playing poker. They have their part in the voyage none the less. The first officer too may be playing cards or reading the late Agatha Christie, for he too is human and fallible, but he is more likely to be professionally employed because more depends on him and his responsibilities are greater. *A fortiori* you are less likely to find the captain idling, for he has more to think about than anyone on board. Moreover it would be pointless to try to determine an axiological priority between the cook and the man who maintains the engines. Regarded on their own level, the two occupations have not the slightest connexion, yet both are working to the same end (*πρὸς ἓν*), the completion of the voyage. The final cause, 'separate and by itself' may be seen in the port for which the ship is making. It may remain entirely indifferent to, indeed ignorant of, the impending arrival, but its existence has instigated all the varied activities, all the discipline and order essential to a properly conducted ship. No analogy can be perfect, or it would be identity;¹ but this one should not mislead if we remember its purpose, to illustrate the kind of unity that Aristotle saw in the universe, and how strictly he wished the term to be understood. He has sometimes been treated not altogether fairly by critics whose minds work *logikōs*, trying to satisfy arguments at the expense of the phenomena.

(5) THE SUBORDINATE UNMOVED MOVERS

Introduction: the cosmic structure. Though the structure of the Aristotelian universe (*κόσμος* or *οὐρανός*) has of course often been

¹ For instance, barring accidents, the ship will reach its destination; the world remains for ever in a state of continuous aspiration.

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described,¹ a brief recapitulation may be helpful, and will come best as an introduction to the present section. The universe is unique (*Cael.* 1 chh. 8-9, *Met.* 1074a31-38), uncreated and indestructible (*Cael.* 1 chh. 10-12, *Met.* 1072a23), finite and spherical. It contains five simple, primary bodies, each with a natural motion towards its proper place, earth and fire² ('the extremes') towards the centre and circumference respectively, water and air ('the intermediates') to the regions above earth and below fire. The earth is stationary at the centre, spherical, and small in comparison with the stars (297b32-98a20). These four combine to form the various bodies in nature. They do not get separated out into layers because they are continually being transformed into each other (305a14-32). The fifth element, *aither*, subject neither to change nor decay but only to eternal circular motion, envelops the rest of the cosmos and penetrates it as far as the moon, though decreasing in purity in its lower portions (*Meteor.* 340b6-10). Within it are spheres revolving in different directions to carry the planets, sun and moon in their apparently but not actually irregular courses. The light (and, in the sun's case, heat) emitted by the heavenly bodies is due not (as had been previously thought) to their being themselves made of fire, but to friction between them and the next element below.³ There is no body beyond the spherical cosmos,⁴ nor any place, void or time. But far from concluding that there is nothing, Aristotle goes on to describe 'the things there' in exalted language as unextended, ageless, changeless and enjoying without interruption the best and most self-sufficient life.⁵

¹ E.g. in my introduction to the Loeb *De caelo*, pp. xii-xiv.

² Not flame, but a highly inflammable material, a kind of hot vapour (*ὑμέκρωμα, ἀναθυμίασις*, *Meteor.* 340b7-8, 341b13-22).

³ *Cael.* 2 ch. 6; see preliminary note in Loeb ed., 176-9.

⁴ As for Plato in the *Timaeus*.

⁵ I have not solved the riddle of this passage, though Solmsen (*ASPW*, 308 n. 20) seems to have no misgivings. (But cf. Elders, *A.'s Cosmology*, 145f.) At 279a30-b3, A. speaks of 'the primary and highest divinity' as changeless but in perpetual movement, and as 'the revolving body' - plainly the cosmic sphere itself, not any unmoved mover. What then is (or are) there in the spaceless, timeless beyond? This is one of a number of indications that *Cael.* represents more than one transitory phase of A.'s thought. He himself admits the provisional character of his results, e.g. at 287b32-88a2: 'One must have regard to the sort of conviction aimed at, whether human or something more powerful. When someone attains more strictly compelling proofs, we must be grateful to the discoverers, but for the present we must state things as they appear.' Cf. McCue, 'Scientific Procedure in A.'s "De Caelo"', *Traditio* 1962, especially pp. 171.

The subordinate unmoved movers

Our examination of Aristotle's physics, metaphysics and theology up to and including a single unmoved mover might be alternatively described as an investigation into his theories of motion and change, so completely is the system built on the nature, causes and consequences of these phenomena. Unfortunately for his expositors, he carried the theories a stage further. The culmination of all worldly processes in one single, supremely indifferent cause affords some satisfaction, if not to the religious emotions, at least to our feeling for unity, plan, and ruthless consistency of thought. But what are we to make of it when we are told, without warning, that this supreme being, so far from being unique, is one of 56,¹ the others apparently its inferiors, but like itself unmoved, eternal and incorporeal?

The plurality of unmoved movers is demonstrated in *Met.* A ch. 8.² Its conclusions depend on the conviction, inherited from Plato and persisting through Copernicus until Kepler, that the movement of stars and planets alike were perfectly circular, because none but circular motion could proceed continuously for ever,³ as theirs to all appearance did. The apparent motions must therefore be reducible to a compound of different circular motions such as might be obtained if a planet were fixed on the innermost of a nest of concentric spheres, revolving on different axes at different speeds, each imparting its own motion to the one within it. Moreover contemporary astronomers, instigated, it was said, by Plato, claimed to have accomplished the revolution by mathematics.⁴ Eudoxus had treated the problem as a purely geometrical

¹ Or 48. See *Met.* 1074a11-14. Ross in his ed. (vol. 1, cxxxvi) gives this reading, but in his earlier Oxford translation accepted Sosigenes's conjecture which would make the total up to 50. On the reduction from 55 see Ross *Metaph.* II, 393f.

² *Phys.* 8, 259a6-13, betrays some hesitation but does not pursue the matter: 'If the motion is eternal, the first mover too will be eternal, if it is one; if more, there will be more eternal substances... But one suffices, which as the first of unmoved substances will be the motive cause for everything else.' One unmoved mover or one first mover among many such? A. says no more, and 258b10-12 has also left it open (εἴτε ἓν εἴτε πλῆθος), though again attaching the word πρῶτον to 'unmoved mover'.

³ Everlasting rectilinear motion would require infinite space, in which A. disbelieved (*Phys.* 265a17-20). Space is where body could be, even though at present there is none (*Caesl.* 279a13-14), and an infinite body is impossible (demonstrated *Phys.* 204b1-26a8).

⁴ For Plato's own scheme see vol. V, 296, and for the problem set to his colleagues *ib.* n. 2 (where will also be found something about Kepler); on the schemes of Eudoxus, Callippus and A. himself, pp. 470-2. In spite of his doubts about mathematics as an aid to philosophy (*Met.* 992a32-33), A. is willing to admit that astronomy is the branch most closely allied to philosophy (1073b4-5) and to turn to it for help in solving a metaphysical problem.

one, but Aristotle, like the *physikos* he claimed to be, looked for a mechanical solution in terms of the fifth body, and on the assumption that the spheres must be in contact with each other, provided extra spheres between the sets for each planet except the lowest (the moon's) to counteract the influence of the set above it.¹ 'Consequently', he continues, 'the existence of a similar number of unmoved substances and principles is a reasonable supposition; *necessary* may be left for more powerful minds to assert' (1074a15-17). Until fairly recently scholars had assumed that this chapter was irreconcilable with the rest of the book, which without it progressed smoothly from a brief résumé of physical principles to the need for a supreme *archē* on which the rest depend (chh. 1-6). Ch. 7 describes this being as pure intellect, an eternal activity of self-thought, and ch. 9 goes straight on to some problems relating to his thinking. 'On such a principle then', writes Aristotle, 'depend the universe' and nature.' He is called 'the god', and it seemed inconceivable that he was anything but unique. Many critics were pleased that Aristotle should turn out to be a monotheist, and the matter seemed to be clinched by the Homeric tag which concludes the book: 'The rule of many is not good: let one alone be lord.' But now, between the two halves of the discussion of God's thought and its object, ch. 8 pushes rudely in with complicated astronomical calculations designed to answer a new question, 'whether we should posit one such being or more, and if more, how many?'.²

The discrepancy between this chapter and the rest of the book seemed to be confirmed by one particular passage. Aristotle has made his point that the planets (which for him included sun and moon) exhibit motions of their own, independent of the outermost revolution carrying them, as well as the fixed stars. But independent motion demands an independent mover, so there must be as many divine unmoved movers as there are motions. He then goes straight on to a proof that there cannot be more than one cosmos (1074a31-38). If there were others, there would have to be separate unmoved movers to

¹ 1073b38-74a14; briefly and clearly explained by G. E. R. Lloyd in *Early Gk. Sci.*, 92f., fully in Heath, *Aristarchus*, 217-21, from whom Ross quotes freely in his commentary. See also vol. v, 450-2.

² Or the sky. For the threefold use of οὐρανός see *Cael.*, Loeb ed., xi. But here it is probably interchangeable with κόσμος, as in *Cael.* (276a28 and b22).

The subordinate unmoved movers

play first cause to each. These will be numerically many but one in form (i.e. will belong to the same species). Now things numerically many have matter, for matter is what separates individual members of a species from each other, e.g. Socrates from his fellow-men. But an eternal and unremittingly active unmoved mover must be pure form.¹ There can, then, only be one universe because there can only be one unmoved mover. So most of us thought, but once again the word 'first' is inserted and may supply the key.²

How can there be more than one pure form? The question, with less compelling considerations of style and order of chapters, led to the idea that the doctrine of unmoved movers for the subordinate spheres was not a part of the philosophy of the one unmoved mover expounded in other chapters of the same book. From Aristotle's mention of the astronomical calculations of Eudoxus and Callippus, Jaeger concluded that ch. 8 was late, belonging to the last seven years of his life, and had not at his death been co-ordinated with the rest of his system. The notes he left were pushed into *Met. A* by an editor because its subject was theology and they were the only portion of his remains that dealt with it. This supposition has now been effectively challenged, notably by the Polish scholar Philip Merlan, who died in 1968.³ Since I believe he has provided the solution, I cannot do better than indicate the main points. Merlan begins by acknowledging bluntly the aversion

¹ ταύτας δὲ τὰς οὐσίας εἶναι ἀνευ ὕλης· ἀδίστους γὰρ δὲ (1071b21). Rie's outright contradiction of this is astonishing (*TAPA* 1965, 344); and when he says 'there is no evidence in the *Met.* that the unmoved movers stand to one another in a relationship of "prior and posterior"' he appears to have overlooked 1073b1-3.

² ἐν ᾧ καὶ λόγῳ καὶ ἀριθμῷ τὸ πρῶτον κινουῦν ἀκίνητον ἐν (1074a36-37). Owens wrote (*Doctrine of Being*, 281, 415 n. 28) that whether or not the 'separate Entities' were one or many was a matter of indifference to A.; and on p. 419 n. 26, 'That "form without matter" must be unique is a later interpretation.' This sounds like a flat contradiction of A.'s own statement at 1074a33-34 καὶ ὅσα ἀριθμῷ πολλὰ ὄντων ἔχει; and so it is, unless one adds the proviso that this applies only to members of the same species.

³ Merlan (i) 'A.'s Unmoved Movers', *Traditio* 1946, 1-303 (ii) *Studies in Epicurus and A.*, ch. III, in which he queries Jaeger's view of the chronological import of the mentions of Eudoxus and Callippus (as does Düring, *Arist.*, 192); and (iii) 'The theological problems in A.'s *Met. Lambda* 6-9 and *De caelo* A9', *Apeiron* 1966. For others (S. Mansion, Festugière, Wollson) see Merlan (ii), 74 nn. 3 and 4. Ross had his own explanation in his British Academy lecture of 1957, reprinted in *Symp. Ar.* I, 11-14, and in his book on A. (1961) he seems to anticipate and reject Merlan's main point. D. Frede criticizes Merlan in *Phron.* 1971, 69-70, and supports Jaeger's view of ch. 8 as a late addition. (I cannot agree with her that 'the relationship of the unmoved movers to each other remains quite unexplained'.) Düring (*Arist.*, 192) claims to have reached the same conclusions as Merlan on other grounds.

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which the chapter naturally inspires: 'To a reader of today the chapter concerning the movers is almost an affront: he feels as if he had been precipitated from the loftiest heights of speculation to the flattest lowlands of pedantry.' Then come the arguments.

(1) In forming his own doctrine of supra-sensible realities, Aristotle had Plato very much in mind, and above all the Forms. To teach the existence of eternal, incorporeal entities was right, but those which meant most to Plato, and which he offered as causes of the sensible world, were unfitted to fulfil a causal role. (Cf. pp. 243-6 above.) That his own eternal substances were intended to replace them Aristotle shows by dismissing them expressly at the beginning of the chapter as contributing nothing of their own to the present question (1073a17-18).

(2) The word *ousia* (being or substance) is used by Aristotle both individually and collectively, i.e. to denote either a single object or the entire sphere or division of being to which the object belongs. An obvious use of the latter sense is the beginning of ch. 6: 'Since there were three *ousiai*, two physical and one unmoved...' The two physical *ousiai* are the world of terrestrial nature and the visible heavenly bodies, each containing millions of *ousiai* in the first sense - plants and animals and the proverbially uncountable stars. This is obvious, and to Aristotle it was no less obvious that concerning the third *ousia* also it was an equally open question how many individuals it comprised. We tend to exclude plurality from it because of its association with the non-sensible, eternal and divine, and our own association of divinity with monotheism. Aristotle has achieved his main purpose, to uphold the existence of the third and highest sort of *ousia*, the unmoved and divine: eternal motion demands an eternal, changeless mover; there is eternal motion; therefore there exists a class 'unmoved mover' as well as the other two. Until we ask whether the universe exhibits one eternal motion or more, we cannot know whether this class contains more than one member. With the Forms in mind, Aristotle may well have been inclined from the first to expect the eternal causes to be more than one. He criticizes the Forms on two grounds only: (i) they were the wrong kind of entities, unable to act as efficient causes; and (ii) Plato never

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settled the important question of how many there were (1073a16).

(3) There remains the major difficulty of how there can be more than one eternal unmoved mover, when plurality involves matter (1074a33-34) and each must be by definition pure form. Matter means imperfection, and potentiality which theoretically might cease to be activated, whereas the unmoved mover must of necessity be eternally active. Even the stars, though eternal, have matter, for they are visible and subject to locomotion.¹ Merlan's answer, accepted here, is that each is unique *of its kind*. Matter differentiates individuals within the same species (*eidos*), for any difference it causes is below the definable level (pp. 145f., 145 n. 3 above) and cannot therefore be called a difference in form (*eidos*); but each unmoved mover constitutes a separate species containing only one member. Here Aristotle avails himself of a 'remarkable logical doctrine' applied by Plato to his Forms, namely that no common form is shared by things on different levels, standing to one another in the relation of prior and posterior.² Once this has been noticed, one is struck by the care with which Aristotle points out that this is the relation between the unmoved movers. The first is 'one both formally and numerically',³ then at 1073b1-5 he claims to have demonstrated 'that they are substances and that there is a first and second among them according to the motions of the heavenly bodies'. 'Prior' and 'posterior' meant for Plato and Aristotle that A (the prior) can exist without B, but not B without A. In numbers the Form of Two can exist without the Form of Three, but not vice versa, which meant that there could be no single Form of Number, but only a separate Form for each number.⁴ The relationship between the heavenly motions, and so between their movers, satisfies this condition. Any sphere and its mover could exist and behave as it does without those inside or beneath it, but not vice versa. There is therefore no species 'unmoved mover' to which the separate movers belong. Each

¹ ὅλη πᾶσιν ποί, τοῖσιν, *Met.* 1069b26, 1042b6.

² *EN* 1096a17-18, *Met.* 999a6-13. (Cf. Ross, *PTI*, 181f.) At *EE* 1218a1-3 he gives the view as his own, also at *Pol.* 1275a34-38, where he applies it to political constitutions: 'One must not forget that where collections of things include individuals distinct in species, then if one of them is primary, another secondary and so on, it is impossible, or at least difficult, for them to have as such anything in common between them.' The reservation, ἢ τοιαῦτα, should not be overlooked.

³ 1074a36-37, Greek quoted on p. 271 n. 2 above. ⁴ *EN* 1096a17-19; cf. *Met.* 1080a17-18,

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is its own *eidos*,¹ and these *eidē* are not grouped under any single *genos*. This peculiarity makes it possible that more than one of these divine beings should exist even though they are pure forms without matter.

In the proof that there is only one world, Aristotle's objection to the existence of others had been that their *archai* would have been 'one in kind . . . but many in number', and so not completely free from matter. This had been thought to rule out also any plurality of forms in *this* world, but on the hypothesis of their hierarchical order it is an integral and necessary part of his thesis. He has undertaken to improve on his predecessors, in particular the champions of Platonic Forms, by finding out the precise number of eternal incorporeal beings: that is, in his philosophy, of unmoved movers. This he did by working out the number of independent motions necessary to 'save the phenomena'.² But he still has to prove that there cannot be more than this total, for which he must show (a) that there are no more independent and eternal motions in this world, and (b) that there cannot be other worlds necessitating more unmoved movers similar to those which cause the movements of our own. His point is this. In our own world, the supposition of a plurality of pure form is not illogical, since, being in a relation of prior and posterior, they are not plural in the sense in which that word implies matter to differentiate between them as it does for the members of a natural species. If, however, there were another cosmos or *ouranos* reproducing the movements of this one, the movers of the two would not be prior or posterior to one another like those activating a single series of spheres arranged in a concentric nest, in which the motion of an outer one modifies that of the inner; they would be parallel, members of the same species, which, since by definition they have no matter, is impossible.

'Thus', concludes Merlan with pardonable self-satisfaction, 'chapter 8 . . . teaches one consistent doctrine, to the effect that there is but one heaven and that within it there are fifty-five independent and eternal movements caused by as many unmoved movers, whose number is thus precisely limited and determined. The chapter does not reveal any

¹ 'Is' rather than 'has', which would suggest a σύνθετον of form and matter.

² The well-known phrase σώζειν τὰ φαινόμενα is used by Simplicius (*Phys.* 292, 15, quoting Sosigenes) in describing the problem set by Plato. Cf. Geminus *op. Simplicius Phys.*, 292, 15, Plut. *De facie* 923a, Kranz in *Rh. Mus.* 1957, 124-9, examines the origin and significance of the phrase.

The subordinate unmoved movers

trace of doubt, uncertainty, inconsistency, self-contradiction or self-correction.' I hope the present version will help to disarm those who have accused him of scholastic bias or of conjecture backed by insufficient evidence. If Aristotle was (as Merlan fully recognized) untroubled by religious doubts over monotheism or polytheism, he was at least concerned for the logical consistency of his own philosophy.

One might venture a little further. From the philosophical if not the religious point of view Aristotle strongly favoured unity, as we saw from the *Physics*.¹ When he wrote 'On such a principle depends the universe and nature' (1072b 13-14), he expressed a conviction that the ultimate *archē*, or highest god, was one – not on religious grounds but for reasons of philosophical economy. This must lie also behind the Homeric quotation that ends the book. The simile of the household in ch. 10 tends in the same direction – 'Everything is co-ordinated for a single end' – while admitting a certain freedom of action within the whole, as (may we say?) the subordinate movers give their planets independent motions as well as those imposed on them by the First Unmoved Mover and other superiors. This consideration affords some supplementary confirmation of the interpretation which Merlan has already shown to be the true one; for the same arguments which remove any inconsistency from a plurality of unmoved movers, each a pure form, bring out the point that 'there is a first and second among them', and that only the completely independent one, head of this household of strange gods and affecting the movements of all the rest, is what he is careful to refer to as the *First* Unmoved Mover. He is justified in writing 'One therefore in form and number is the First Unmoved Mover', and concluding that the world, which is the best possible, is not democratically governed, but a monarchy.

'The rule of many is not good; one ruler let there be.'

Not monotheism nor henotheism then, but divine monarchy.²

Nothing said here precludes the possibility that the subordinate movers

¹ Cf. 159a8-13, pp. 169 n. 1 and 244 n. 1 above.

² The idea of monarchy on a cosmic scale was reiterated by political theorists in the 16th and 17th centuries as an argument for a monarchical society. See Greenleaf, *Order, Empiricism and Politics*, 44-7. As a broadside of 1618 has it:

'Nature herself disdains a crowded throne.'

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are a later addition to Aristotle's theology prompted by contemporary astronomical research. The only claim is that whenever they were introduced they would not involve him in the major inconsistencies imputed to him in the past. A possible sign of incompleteness is the paucity of information about their action and their relation to the First. That they are eternal, unmoved and unchanging, without body, final causes,¹ hierarchically arranged according to the motions which they cause, and rightly called gods – that is about the sum of our explicit information. That their activity is thought like that of the First, making them the 'Intelligences' which they were for medieval scholastics, is not mentioned, though doubtless true (save that if they are activated by love of the First it cannot be self-thought). That they emulate the First as does embodied nature, that they move the planetary spheres as he moves the whole, as objects of desire – all this we may assume but are not told. From the *Placita*² until modern times they have been identified by some with the souls of the living planets themselves, but the parallel with the eternal First Mover tells against this.

¹ It would be natural to take the statement at 1072a26, that what is the object of desire and thought moves without being moved, as universal and convertible.

² *Plac.* 881 e–f: 'He holds that each of the spheres is a living thing, compounded of body and soul. The body, of *either*, revolves in a circle, while the soul, an unmoved form, is the cause which activates the motion.'

XIV

PSYCHOLOGY¹

I follow custom in giving this title to Aristotle's investigation of life and its properties in their various forms and gradations, principally as expounded in the three books *De anima*, supplemented by contributions from the more strictly scientific biological works.² It will be understood that it is not what goes by that name today, but the study of the *psychē*, the life-giving principle, or life itself,³ which had undergone many changes in the minds of religious teachers or philosophers since its appearance in Homer as a ghostly double of the man himself (*Il.* 23.65-67), banished at death from the body and its joys to a feeble, miserable existence in the underworld. There followed its immortality, transmigration and ultimate divinity, impressed on Plato by the Orphics and Pythagoreans, and its identification with the mind in the *Phaedo*, *Theaetetus* and elsewhere.

The genetic approach. On the development of Aristotle's theories of the *psychē* and its relation to the body there is at present no settled consensus of opinion. A landmark was the book of F. Nuyens, *L'évolution de la psychologie d'Aristote* (1948).⁴ He detected three stages:

(1) Aristotle accepts the full doctrine of Plato's *Phaedo* that the soul

¹ Note Hamlyn's translation with commentary of *De an.* 2 and 3, with some passages from book 1 (1968). In references to *De an.* the title will often be omitted here. It includes anything between 403a and 435b in Belcker's pagination. This chapter was written before I saw E. Hartman, *Substance, Body and Soul: Aristotelian Investigations* (1977). For a review of it see M. Schofield in *Philos.* 1979, 427-30.

² Some may like to describe *De an.* as largely concerned with metaphysics (cf. p. 130 n. 2 above), though (a) that is by no means wholly absent from *PA*, *GA* and their likes, and (b) in A.'s view the study of the *ψυχή* was a part of *φυσική* and must take into account the bodily accompaniments of psychical states as well as the states themselves (403a22-23; Ross, *De an.*, 16).

³ E.g. 'to take someone's life' is *ψυχὴν ἀποστερήσαι τινα*, to deprive someone of his *psychē* (Thuc. 1.136.4 etc. For other examples of this sense see *LSJ* s.v.). This makes it somewhat dangerous to distinguish between 'soul' and 'life' as S. Mansion does in *Symp. Ar.* vii, 4.

⁴ This was in fact a Dutch dissertation of 1939, published in 1948 in Louvain in a French translation, with some retouching by the author and an appreciative preface by A. Mansion. It was reprinted in 1973.

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is an immortal substance temporarily imprisoned, or entombed, in the body, and enjoying its true life only before birth and after death. This stage is represented by the *Eudemus*¹ and takes account only of the human soul.

(2) The biological works adopt a wider conception of soul, covering all animals and plants, and emphasizing the fine gradations between different forms of life. Now Aristotle holds what Ross called a 'two-substance' view of soul and body, not, however, in a Platonic sense. In this 'instrumentalist' conception, as Nuyens called it, 'soul and body are considered as two things, but two things completely adapted to each other'. Soul is not made of any corporeal element like fire, but stands to all bodies as a carpenter to his tools;² life *utilizes* bodily parts and processes but goes beyond them. Nevertheless the soul is still spoken of as *in* the body, and given a precise location, *viz.* the heart.³

(3) Last comes *De anima*, which brings psychology into line with the universal principles of Aristotle's philosophy by teaching that body and soul together form a unity, one living being which like everything else in the natural world must be compounded (*σύνθετον*) of form and matter. Of this single being soul is just the form or actuality, body the matter. At this stage he explicitly criticizes Plato's and his own earlier view (*De an.* 402b3-5).

Ross in his editions of the *Parva naturalia* (1955, pp. 3ff.) and *De anima* (1961, p. 9) accepted the tripartite scheme in general, but suggested modifications in the chronology of separate works. In 1959 Theiler, in the introduction to his translation of *De anima*, denied that chronological inferences could be drawn from the contrast between (a) soul and body as separate entities and (b) soul as the entelechy of the body: the difference, he claimed, is rather that between scientific (biological) and philosophical discussion of the soul. I. Block, in an article directed against Nuyens and Ross,⁴ reversed their conclusions,

¹ And the *Protrepticus*, if fr. 106 Ross really belongs to that work; but many scholars would now assign to the *Eudemus* the simile of the macabre torment inflicted by Etruscan pirates.

² So e.g. *PA* 652b13-15. This, however, is pure Socraticism, as adopted by both Plato and Isocrates. See vol. III, 472, and *Isocr. Antid.* 180. Nor is it absent from *De an.* (407b24-26, p. 280 below).

³ But A. did not consider the incorporeality of the soul any bar to its location in a particular part of the body. See *Iuv.* 467b14-15.

⁴ 'The Order of A.'s Psychological Writings', in *AJP* 1961. It betrays certain marks of

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arguing that *De anima* represents an early period of Aristotle's thought and may have been written at a time when he had not yet seen the importance of the heart for any of the vital functions. Bert's *Filosofia del Primo A.* (1962) criticizes Nuyens in a number of places,¹ but the most radical attack on his views has come from C. Lefèvre in his *Sur l'évolution d'A. en psychologie* of 1972.² Under his scrutiny, as a reviewer has put it, Nuyens's convenient chronology disappears and is not replaced by anything else.

(1) THE PRELIMINARIES

According to his recommended practice (pp. 89ff. above), *De anima* begins with a brief statement of the problems to be faced (and in this case an admission that he is embarking on the most difficult of all enquiries), followed by a critical review of his predecessors, the motive for which he here states explicitly: 'that we may adopt their good points and avoid their errors'. A paragraph from book I ch. 1 will illustrate the difficulties which he recognized, and may arouse some sympathy, for they are surely those which trouble us too when we try to extract a consistent doctrine of the soul from Plato's *Phaedo*, *Republic*, *Phaedrus*, *Timaeus* and *Laws*. Should we regard it as a unity, or made up of parts? Are the passions – fear, anger etc. – affections of soul or body, or of soul in so far as it is united with body? Is the soul as a whole immortal, or *nous* only? Can *nous* be regarded as so literally separable from the rest as to be capable of immortality if the rest is not? And so on. Here is the paragraph in question (403 a3–10):

A further difficulty arises concerning the attributes³ of the soul, whether they are all shared by that which possesses the soul or any one of them is peculiar to the soul itself. To understand this is essential, but not easy. It carelessness, and some of its arguments are dubious, but in general B. makes out a good case. The systematic order, in which A. intended his biological works to be read (a different matter), is noted by Kahn in *AGPh* 1966, 47 n. 12: *De an.* serves as introduction to the short 'psychobiological' treatises of *PN* and the 'great systematic works in zoology' (*PA* and *GA*). Together they form 'a continuous and progressive exposition' (*ib.* 63).

¹ See the numerous ref. to N. in his index, and especially p. 397.

² For his views on A.'s psychology see also his paper 'Sur le statut de l'âme dans le *De anima* et les *Parva Naturalia*', *Symp. Ar.* VII, 21–67.

³ Or 'affections' (so O. Tr.). For the meanings of πάθη see *Met.* A ch. 21, and cf. Sorabji, *Philos.* 1974, 69 n. 21.

would seem that in most cases soul neither acts nor is acted upon apart from the body, as e.g. in anger, confidence, desire and sensation in general. Thinking (*τὸ νοεῖν*), if anything, looks like something peculiar to the soul, but if thought is a sort of imaging,¹ or dependent on imaging, not even that can take place without body. If then there be any action or passion peculiar to the soul, it will be possible for it to be separated from the body, but if not, not.

In earlier theorists he sees two general and related faults. First, they do not clearly perceive that the soul of an individual living thing is formally a unity, though possessed of parts or faculties (powers)² which differ from one another within it but have no separate existence. Secondly, they fail to grasp the close relationship between soul and body. They speak of the soul as something separate, which may be detached, whereas in truth not only is soul a unity but soul and body together form a single living creature. So in connexion with Plato's idea that the soul is moved, he says (408b 1-15):

We say that the *psychē* feels pain and joy, takes courage or is afraid, is angry, perceives and thinks. These all seem to be movements, so we think the soul is moved . . . But to say that the *psychē* is angry is like saying that it weaves or builds; it is better to say not that the *psychē* pities or learns or thinks, but that the man does so *with* his *psychē*.

A characteristic passage in the first book is 407b 13-26:

There is another absurdity in this as in most other theories concerning the soul. They attach soul to, and insert it in, body without further determining why this happens and in what condition of the body. Yet such explanation would seem to be demanded, as it is owing to their association that the one acts, the other is acted upon, the one is moved and the other moves it; and between things taken at random no such mutual relations exist. These people merely undertake to explain the nature of the soul: they add nothing about the body that is to receive it, as if it were possible for any soul to enter any body, as the Pythagorean stories have it, whereas each

¹ φαντασία. On this see pp. 287-8 below.

² A. uses the term 'parts' (*μέρη*) and 'faculties' (*δυνάμεις*) of the soul indifferently, as he confesses at *Juv. et zen.* 407b 16-18 τὰ μὲν οὖν ἄλλα τῆς ψυχῆς ἢ μόρια ἢ δυνάμεις, ὁποτέρως ποτε δεῖ καλεῖν . . . That *δυνάμεις* is the more accurate of the two emerges from what he says elsewhere. Soul is a unity in the sense that figure is, i.e. it is properly the subject of a single definition (*εἰς λόγος*), though the triangle, square etc. have each their own definition as well (414b 20-24).

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body has its own distinctive shape and form. It is like talking of a transmigration of carpentry into flutes; for just as the craft must employ the right tools, so the soul must employ the right body.¹

This is a hint that a satisfactory study of life must be rooted in a study of the living body, that psychology must be based on physiology, and so we find him insisting that all or most of the subject falls within the province of the natural scientist.² Anger may be defined in two ways, as a desire for retaliation or as a boiling of the blood around the heart. The first describes the form or essence, the second the material in which it is realized, and it is the scientist's business to take both into account.³ Here, as everyone knows, he did not fail to live up to his own teaching.

His own view is that soul is the form or actualization (identified, as regularly, with substance or essence, *Met.* 1035b14-16) of a living creature, as the body is its matter.⁴ This might at first sight suggest the epiphenomenalist theory which calls life an 'emergent characteristic' of the body - a result supervening on the physical constitution and arrangement of the bodily parts - making it both secondary in time and ontologically subordinate to the body. The nearest ancient equivalent was the doctrine of the soul as a *harmonia* of the bodily parts, familiar from Socrates's refutation of it in the *Phaedo*, and this is rejected by Aristotle as vigorously as by Plato.⁵ To credit Aristotle with either of these beliefs would be to forget the exalted place occupied by form or actuality (*eidos*, *logos*, *energeia*) in his as in Plato's philosophy. The actual preceded the potential both chronologically and logically (pp. 252, 253 above): a fully developed member of a species must exist before a new one can be created. Of life as a whole the only perfect instance exists eternally. The individual *syntheton*⁶ of

¹ Translation based on Hicks, but with some changes. We notice again how the instrumental analogy for body-soul relations persists in *De an.*

² τοῦ φυσικοῦ, 403a27-28. How far the study of the ψυχὴ is a part of φυσικὴ is the subject of an interesting discussion at *PA* 641a12-b8.

³ 403a24-b9, cf. *Phys.* 198a22: the φυσικός must study all types of cause, the formal, efficient and final as well as the material.

⁴ Sometimes (e.g. *Met.* 1043a33-34) he calls soul the λόγος or οὐσία of a body, but more accurately of a *living* body (415b8, 11) and more accurately still of the σύνθετον, the whole man, animal or plant consisting of body and soul (τοῦ ἐμψύχου, *Met.* 1035b14-22; cf. 1037a5-7).

⁵ For the doctrine see vol. IV, 330f. and I, 307ff., for A.'s refutation of it, 407b27-08a18.

⁶ For the *syntheton* see p. 103 above.

body and soul must recreate its own inferior instance, and its internal progress is from potential to actual; but for a whole species the actuality of life is prior even in time to matter (its potentiality) as well as superior in being.¹

(2) THE DEFINITION OF SOUL AND ITS RELATION TO THE
BODY

Having settled the preliminaries, at the beginning of book 2 he tackles the definition of the soul, first restating, in admirably clear and concise terms, his universal principles of matter-potency and form-act. The name substance, he goes on, is most naturally applied to physical bodies, which may or may not have life. By life (that is, its most elementary and universal form) is to be understood the power of self-nourishment, growth and decay. Every living being possesses these minimal requirements, whereas other, higher faculties belong to some only.² Now a living body, like all separately existing substances, is composite.³ We say it is of a certain kind (*τοιοῦδε*), namely possessing life, indicating that the body is substratum, matter or subject, and life (*psychē*) its form or predicate.⁴ So the first attempted definition of soul at 412a19 is (1) a substance (*οὐσία*) in the sense of the form of a body potentially

¹ With the universe as a whole, temporal priority does not arise, but all is dependent on the supreme living being, the first Unmoved Mover who as pure *ἐνέργεια* is life itself (*ἡ γὰρ αὐτὴ ἐνέργεια ζωῆς*, p. 260 above).

² Thus plants have life, though not sensation. At an earlier stage A. seems to have excluded them by making sensation the criterion of life (*Protr.* fr. 74 and 80 Düring, p. 76 above). Alternatively he may have been still following Plato, who ascribed sensation to plants (*Tim.* 77 a-c). He seems to be going out of his way to contradict Plato when he speaks in *PA* (681a13) of *τὰ ζῶντα μὲν οὐκ ὄντα δὲ ζῆα* in contrast to *Tim.* 77 b πᾶν γὰρ ὅτιναι ἂν μετασχῇ τοῦ ζῆν ζῶν μὲν ἂν ἐν δίκῃ λεγοίτο.

On the lack of sensation in plants see 410b23-24, 411b27-30, 414a32-b1, 415a2-3, 424a 32-b3 faces the question why this should be so, and it is again explained at 435b1. Plants lack the necessary 'mean', being composed solely of earth, whereas even touch, the most basic of the senses (p. 286 below), demands the presence of more than one of the four elementary bodies.

³ 412a15-16 ὥστε πᾶν σῶμα φυσικὸν μετέχον ζωῆς οὐσία ἂν εἴη, οὐσία δ' οὕτως ὡς συνθετή.

⁴ Notice how A. uses the implications of ordinary language to support his thesis that soul is to body as form to matter. It is a good example of the continuing entanglement of logic and ontology that the same word *ἐνοικιῶν* means both the subject of a proposition and the substratum to be postulated as an element in every physical object. This is brought out in the next sentence (412a17-19).

Definition of soul

possessed of life. When a body potentially alive (furnished with the necessary organs etc.) exists in actuality, soul (life) is its form or entelechy (412a21-22).¹

On this provisional definition a refinement is made. There are different stages of actuality: a man has life even though his vital faculties are not in full activity, e.g. when he is asleep, so soul may be called (2) the first, or lowest, stage of the actuality of the living body. Finally, the potentially living body is *organic* – possessed of *organa*, members with functions to perform (*organon* meaning literally a tool or instrument): 'All natural bodies of plants and animals are instruments of soul, in the sense of existing for the sake of soul' (415b18-20). So the definition can be shortened by substituting 'organic' for 'potentially possessing life', and takes its final form (3) as 'the first actuality of an organic natural body' (412b3-4).

But observe how this definition is introduced. 'If', he says (412b 4-5), 'we are really compelled to give a general formula covering soul as a whole', it would be this. He does not himself approve of doing so,² and after explaining the subject in further detail says: 'We must investigate separately what is the soul of each kind, e.g. of a plant, a man or one of the lower animals... It is evident that the most adequate definition of soul consists in a description of each of its faculties separately.'³ To illustrate the logic of his argument he uses the analogy of geometrical figure. It is certainly legitimate to offer a definition of figure as such, but it will not define any particular figure like a triangle or a quadrilateral.⁴ Like figures, souls (that is, the various manifestations of life) constitute an ascending scale, a 'developing series' of

¹ This is not to suggest that the organic body ever exists potentially, waiting, as it were, for God to breathe life into it. A living creature is a unity, but its elements of matter (the organic body) and form (the soul) can be separated conceptually and even factually when the lifeless body continues to exist after death. But deprived of its $\psi\upsilon\chi\eta$ the plant or animal is only homonymously such: a dead hand or other limb or organ has the name of hand but not the reality (G.4 726b22-24, Met. 1035b24-25; cf. the sightless eye at De an. 412b18-21).

² No doubt the contemporary philosophical situation compelled him to. It is not in my opinion necessary, especially in view of a protest like this, to follow Düring (*Arist.*, 558 f., 572 n. 74) in assuming inconsistencies, and hence different chronological strata, between A.'s attempts at a general definition of soul and his analyses of its separate functions.

³ 414b32-33, 415a12-13. Cf. *Top.* 148a29-31: 'The word "life" does not refer to a single form: life is one thing for animals and another for plants.'

⁴ The need for science to get as close as possible to the particular has been noticed several times already, e.g. on pp. 143f., 207, 210.

increasing complexity, such as cannot properly be said to share a single form.¹

To assist understanding of the relation of soul to body, it is said in ch. 1 to be the same as that of a single faculty – say sight – to the organ through which it is realized: ‘If the eye were an animal, sight would be its soul.’² He adds an analogy from inanimate objects; the essence of an axe being its sharpness, an axe existing in actuality has cutting power, which is to it as soul is to the body whose essence is life.

This doctrine of soul as form or entelechy of the body, if rigidly maintained, is obviously a death-blow to immortality. Soul is indissolubly united with the body. ‘It will not do to ask whether soul and body are a unity any more than whether wax is a unity with the shape imposed on it, or in general matter and that of which it is the matter. Though unity and being have several meanings, they apply most properly to the entelechy.’³ Similarly at 414a19: ‘For this reason [κ . that it is the entelechy of the body] those are right who hold that soul neither is body nor exists without body. It is not body, but belongs to body, and for this reason exists in body, and body of the appropriate kind.’⁴ Even the emotions are ‘forms in matter’ (403a25). Moreover, just as in the separate senses soul makes use of bodily organs, so in its more general function as the vital principle in animal life it works through a corporeal medium called by Aristotle ‘connate (or ‘innate’) spirit’ (*pneuma*) or ‘innate (also ‘vital’) heat’, centred in the heart but also the fertilizing element in semen.⁵

¹ Cf. p. 273 above and Joachim, *Ethics*, 37f. I do not think that what is said here conflicts with Barnes in *PAS* 1971–2, 102, though I would not support all that he says in that article; e.g. to say that what A. calls an *οὐσία* (412a19) is not a substance is to invite confusion (p. 103), which pp. 112f. do nothing to remove. The relation between A.’s concepts of substance and form cannot be dismissed so lightly.

² Anscombe subjects this analogy to a searching (too searching?) analysis in *Three Phils.*, 56–8.

³ 412b6–9. The entelechy is here the concrete object at its highest stage.

⁴ Cf. 407b13–26, p. 280 above.

⁵ For *σπέρματος* (or *ἐμμένου*) *πνεῦμα* and *θερμὸν* (*θερμότης ψυχική* at *GA* 761a20) see especially *MA* 703a9–24, and in modern scholarship Ross, ed. of *PN*, 40–3. (Other refs. are in Düring, *Arist.*, 343 n. 343, to which add Grene, *Portrait of A.*, 36.) Ross’s insistence that *πνεῦμα* and *θερμὸν* are never identical is difficult to maintain in the face of *GA* 736a33–b1 (not quoted by him), where A. says that the heat in the spermata is what makes them fertile, and adds that it is not fire or the like but a *πνεῦμα* in the foamlike semen, of a nature ‘analogous to the element of the stars’ (i.e. *αἰθήρ*). Cf., however, Düring, *Arist.*, 344f.

For the essential connexion of heat with life in Greek thought before A. see vol. 1, 61, 92f.

Functions of soul

However, in spite of these unequivocal and apparently all-embracing assertions, Aristotle at several points in the treatise, and also elsewhere, expresses reservations regarding the mind, the faculty of abstract thought and intellectual intuition (*nous*), peculiar to man and perhaps a link with the divine. After several postponements, the question of the nature of *nous* is finally faced in the middle of book 3. (See pp. 309ff. below.)

(3) FUNCTIONS OF SOUL

Though generally speaking soul must be regarded as a unity, it operates in various ways, enumerated and classified in ch. 3 as the various 'powers' of soul:¹ that is, since soul is properly described as the actuality of a living body, the modes of activity of living beings as such. These are listed as five, but could be considered as three, since three of them always occur together.² There is also the broad division of animal faculties into locomotive and cognitive (427a16, 432a15), which Aristotle endeavours to relate to the others.³ Every living thing possesses one, the lowest. Some combine it with the two or more next above it, others again with all faculties of soul including the highest.

Life was defined in book 2 ch. 1 as 'self-nourishment, growth and decay', hence every living thing must possess the nutritive soul, which includes the ability to reproduce one's kind.⁴ Plants, and embryos at

(Anaximander), 101f., 291f. (Empedocles); vol. II, 59 (Anaxagoras, Archelaus), 64 (Parmenides), 207 (Empedocles), 315 (Anaxagoras). 'Vital spirits' have had a long history, persisting until the 16th century and even in William Harvey himself. (Butterfield, *Origins*, 37, 47.)

¹ *δυνάμεις*, also called by Plato's word 'parts' (*μέρη*, *μέρια*). A. sees no need for a rigid terminology. (He can of course, unlike ourselves, omit the noun altogether, as at *De mem.* 450a22-23.) (Cf. p. 280 n. 2 above.) So too, although all these are aspects or powers of a unitary soul, the expression *θρεπτική ψυχή* gives him no qualms (415a23-24, cf. 26). The question in what sense the soul has parts is raised briefly at 413b13-24.

² A.'s list of five at 414a31-32 is certainly no better than the list of three, since if parallel functions are all to be included, there should be at least seven: *θρεπτικόν*, *γεννητικόν* (ή αὐτὴ δύναμις τῆς ψυχῆς θρεπτικῆ καὶ γεννητικῆ, 416a19; also *GA* 735a17-18), *αἰσθητικόν*, *ὁρεκτικόν*, *κατὰ τόπον κινήτικόν*, *πανταστικόν* *θενονητικόν*.

³ At 432b13-33b1; cf. *PA* 641b4-8. But as Solmsen says (*AJP* 1955, 149), they do not fit easily into the ascending scale of the other scheme. (See Solmsen's article 'Antecedents of A.'s Psychology and Scale of Beings' for anticipations of the scale, especially in Plato.)

⁴ 412a14-15; for reproduction 416a19 (n. 2 above). For a modern counterpart cf. the zoologist F. G. Young (*Religion and the Scientists* 1959, 39): 'The obvious criteria of life in the material sense are the ability to respire or breathe, ability to reproduce, and ability to grow or effect self-maintenance.' (The fact that plants breathe was not discovered until towards the end of the 17th century.) For Monod, 'the most general qualities of living beings' are 'teleonomy,

an early stage,¹ have no more, absorbing nutriment automatically without sensation. Next in the scale is sensation, implying the capacity to feel pleasure and pain, and so importing appetency or the reverse (413b23-24, 434a2-3). Among sensations touch (including taste) is primary (i.e. it can exist without the others, but not they without it), being necessary for the recognition of food.² Locomotion does not necessarily accompany sensation,³ but itself presupposes sensation, for movement is a response to the stimulus of appetency. Within appetency itself the rising scale continues: bare animal desire, high spirit (ambition and so on) and rational will.⁴ Finally comes reason.⁵ *Nous*, in the sense of that infallible intellectual intuition by which, as the climax of scientific study, we grasp the truth as it were at first hand, is not only confined to man and any higher beings, but the highest of several so restricted. The question of its nature is again expressly reserved for later discussion: it is 'another story'. Apart from this, the power of reason or thought comes 'last and rarest'.⁶ The functions of soul are presented as an ordered series, on the principle that in the physical world⁷ the presence of a higher faculty in a creature necessitates the presence of those below it. Man having reason must have the

autonomous morphogenesis, and reproductive invariance' (*Chance and Necessity*, 23). These go comfortably into Aristotelian Greek as τὸ οὐ ἔνεκα, εἰς ἐντελέχειαν βαδίζαν τὸ δυνάμει ὄν, τὸ ἄλλο τι ὄντων αὐτῶν γενέσθαι.

¹ For plants see p. 282 n. 2 above; for embryos GA 736a32-b1. Cf. Needham, *History of Embryology*, 49.

² 413b4-9, 414b6-11, 415a2-3, 435b4-7, *Somn.* 455a27, *HA* 489a17-18, 535a4-5, *PA* 653b22-24. In the *Ethics* (1118b1-3) this is given a moral application. For taste as a form of touch, see 421a18-19, 434b18.

³ *Envois*, 414b16-17. A. is thinking of certain shellfish and zoophytes which he supposed to have sensation but to draw their nourishment from rocks and the like to which they adhere (ἀπὸ τῆς προσφύσεως οὕσα ἢ τροφή, *HA* 548b7-8).

⁴ ἐπιθυμία, θυμός, βούλησις, 414b2. θυμός is doubtless a relic of Plato's τὸ θυμοειδές, described in vol. IV, 476. It comes between ἐπιθυμία (brute appetite) and βούλησις (appetite plus reason).

⁵ Under the general heading of διανοητικόν (414a32), divided at 415a8 into λογισμός (calculation) and δεινόν (discursive reasoning). Of course A. also uses *nous* to cover these as well as in its exclusive sense.

⁶ *Nous* is ἔργος λόγος, 415a11. It and τὸ διανοητικόν are confined to mankind 'and any superior being that may exist', 414b18-19.

⁷ The limitation should be noted. Rose simply says (*Aristotle*, 129) 'The forms of soul form a series with a definite order, such that each kind of soul presupposes all that come before it.' One immediately thinks of the god who is pure νόσις without the lower faculties and the poor philosopher will be accused of slipshod writing of which, for once, he is not guilty, his words being (415a8-9) οἷς μὲν γὰρ ὑπάρχει λογισμός τῶν φθαρτῶν, ταύτοις καὶ τὰ λοιπὰ πάντα.

Functions of soul

faculties of the lower forms of life – nutrition, reproduction, sensation, desires – as well.

Here we may introduce ourselves to *phantasia*, at first sight a somewhat puzzling phenomenon between sensation and thought.¹ The word is generally rendered 'imagination', though lacking the English word's associations with poetic or other artistic creativity.² It is not sensation, though dependent on sensation,³ nor *nous*,⁴ nor belief (or opinion, *doxa*), though like belief it may be true or false, nor a combination of either thought or sensation with belief. It is not judgement, though judgements are based on it.⁵ All this sounds somewhat baffling, but primarily Aristotle uses *phantasia* for visualizing, the retention or recovery of past sensations as memory-images, an action which we can perform at will.⁶

427b 17–24. This experience is within our power, whenever we like. We can set something before our eyes, as in those mnemonic systems which employ mental images, whereas belief, which is either true or false,⁷ does not rest with us. Again, when we judge something to be dreadful or alarming, or alternatively as inspiring courage, we at once feel the appropriate emotion, but imagination is like looking at terrible or encouraging scenes in a

¹ A. discusses it most fully in bk 3 ch. 3. The 'classic treatment' (Düring) is J. Freudenthal's *Über den Begriff des Wortes φ. bei Arist.* (1863). For other refs. see M. Schofield, 'A. on the Imagination' in *Symp. Ar.* vii, especially p. 130 n. 2. Schofield's work (pp. 102–40) is noteworthy for the attention paid to modern philosophers like Ryle, Wittgenstein, Strawson, Ishiguro, and Williams. He himself aptly calls *φαντασία* 'this fustian concept' and perhaps its composite rather than strictly unitary character provides a clue to the understanding of it.

² Beare in the Oxford translation of the *PN* (449b 30 etc.) renders it 'presentation'. On its relation to imagination cf. Schofield, *loc.* 101–3.

³ 'A movement stimulated by the act of sensation' (429a 1–2, *Insomn.* 459a 15–18). At *Mem.* 450a 10 it is 'a property (*πάθος*) of sensation acting as a whole'.

⁴ Although at 433a 19–20 it may be *vōnōis tis*. In the *Rhet.*, a practical manual, it even becomes 'a weak form of sensation' (1370a 28–29).

⁵ The relation between *λόγος*, *δόξα* and *φαντασία* had been discussed by Plato at *Soph.* 260eff. Like the others, *φαντασία*, which is a combination of *αἰσθησις* and *δόξα*, can be true or false.

⁶ This might be called its technical use. It is also used simply as the noun from *φαίνεσθαι*, as in comparing the apparent and real sizes of the sun (428b 2–4). At 415b 24–25 the plural appears to refer to after-images.

Its specialized meaning reappears today as 'ideation', described by W. H. Thorpe as 'the occurrence of perceptions, in the absence of the corresponding external stimulation, in the form of images. These images can be in some degree abstract or generalized and can be the subject of further comparison and reorganization by learning processes' (*Biology and the Nature of Man*, 37). This comes close to the relationship between *phantasia* and mind as understood by A.

⁷ But so is *φαντασία* (428a 12, 18).

picture.¹ Memory depends on it, being impossible without visual recovery. Both belong to the same element [no noun at *Mem.* 450a22] of soul, and the objects of both are individuals.²

Finally, *phantasia* itself occurs on two levels, the sensitive and the deliberative or rational, for it is obvious that animals have this power of recall, which is a prerequisite of desire, without sharing the human faculty of reason.³

(4) THE LADDER OF LIFE (see table on p. 289)

The purpose of this possibly tedious enumeration of the faculties of soul has been to emphasize the *gradualness* of the development which they display. The basic characteristics of life are the same in plants as they are in us, and from this beginning the scale rises by slow degrees, with creatures existing at all points along it. *Natura non facit saltum*. Hence the large number of faculties and sub-faculties, some of which overlap the three biological classes of animals, plants and men. Take desire for instance.⁴ The general term is used, then sub-divided to bring out the point that at bottom it is the same impulse which is shared by a caterpillar, a dog and a man, though in the second it may be joined with courage and in the third with reason. All this is in strong contrast to Plato, who liked his divisions simple and clear-cut.⁵ He was arguing, Aristotle would say, abstractly (*logikōs*), whereas Aristotle's study of the nature of soul was based on positive biological study (*physikōs*). If we have not time, or perhaps inclination, to pursue

¹ *MA* 701b18-22 is puzzling. There *φαντασία* is joined with *νόησις* as having the effect of the reality (*τὰ πράγματα*), so that we shudder and feel fear at the mere idea (*νοήσαντες μόνον*). The inclusion of *φαντασία* here seems a direct contradiction of the above passage from *De an.* However, as Düring cites it without misgiving as a parallel to that passage (*Arist.*, 341 n. 327) I may have misunderstood. In any case I feel no doubt that the *De an.* passage represents A.'s genuine view.

² *Mem.* 450a12-13, 22-23; *EN* 1147b5.

³ 434a5-7, 433a11-12, b28-30; *MA* 702a18-19. The relation of *φαντασία* to *λόγος* and *βούλησις* will be discussed in the section on thought (pp. 309ff. below).

⁴ τὸ ὁρεκτικόν, 'reaching out' after something, not precisely corresponding to any English word.

⁵ Plato is criticized (not by name) at 432b4-7: 'It is absurd to tear τὸ ὁρεκτικόν apart. In reasoning beings we have will (*βούλησις*), and in the irrational desire and courage (*ἐπιθυμία* and *θυμός*)'. If soul is threefold, τὸ ὁρεκτικόν is in each of its parts. Cf. 433b1-4. Solmsen notes (*AJP* 1955, 349f.) that in the *Ethics* and *Politics* A. keeps closer to the Platonic scheme. But then, ethics and politics are no part of exact philosophy (pp. 78-9 above).

The ladder of life

THE SCALE OF LIFE

(Faculties joined by + are on the same level)

LIVING BEINGS

PLANTS and ANIMALS	ANIMALS	
NUTRITIVE Nutrition + reproduction	SENSITIVE Touch + taste sight + hearing + smell	RATIONAL Practical + theoretical reasoning + calculation, intellectual intuition (<i>nous proper</i>)
	APPETENT	
	physical + courage etc. desire (<i>ἐπιθυμία</i>)	+ rational will (<i>βούλησις</i>)
	IMAGINATIVE	
	sensitive (<i>αἰσθητικὴ</i>)	+ deliberative (<i>βουλευτικὴ</i>)

this side of his work in detail, we must at least appreciate how different is the intellectual atmosphere from that of the conversation in the house of Cephalus where it was first suggested that the soul of man might be divisible into three parts. Here are two examples out of many.

HA 588b4-13, 18-21.¹ (Cf. PA 681a12-16.) Nature advances from the inanimate to animals with such unbroken continuity that there are borderline cases and intermediate forms of which one cannot say to which class they belong. First after the inanimate come plants. These differ from each other in the degree to which they appear to have life, and in comparison with other bodies appear animate but in comparison with animals inanimate. And the transition from them to animals, as I have said, is continuous; there are creatures in the sea about which one might well be in doubt whether they are animals or plants.

HA 588a18-21. In most other animals too there are traces of the psychical types which are most clearly differentiated in man.²

¹ Just possibly an addition by Theophrastus (Dirlmeier, *Oikeiosis-Lehre*, 58), though book 8 is, in great part at least, A.'s (Düring, *Arist.*, 506). That the doctrine is his there is no doubt.

² 'In 1740 Trembley announced the discovery of the freshwater polyp, which combined the characteristics of animal and plant.' (Hampson, *Enlightenment*, 89.) Cf. in our own century Thorpe, *Biology*, 28: 'We all exhibit in our behaviour types of action which we share not merely with our primitive primate ancestors, but with the dog, the protozoon, and the plant.' In the 19th century, G. H. Lewes, *Arist.*, 194: 'The much debated question respecting a line of demarcation between Plant and Animal had not arisen in those days. It is not settled in our own.'

Needham calls Aristotle's *scala naturae* 'a foreshadowing of the evolution-concept which ensues as soon as the ladder is realised to exist within time' (*Science and Civilisation in China* 1, 155). It may seem surprising that with such science-based ideas he never entertained the possibility of temporal evolution instead of a static hierarchy, but it would have run counter to his deeply rooted, Platonically-inspired conviction of the permanence of form and its priority to matter, of act to potency.¹ There is indeed an interesting passage in *GA*, where in the course of an account of the supposed process of spontaneous generation he mentions the widespread tradition about men born in prehistoric times from the earth, and adds: 'So concerning the generation of man and quadrupeds, one would suppose that, if indeed (εἴπερ) they were at any time earthborn as some assert, this would come about either by the formation of a worm [or larva] or from eggs.'² However, it is pretty clear that Aristotle himself did not believe in the earthborn men, still less that they developed from earthworms.³ How far from his thoughts was anything approaching evolution as understood today is strikingly shown up by his criticism of Empedocles at *De resp.* 477b5-7: 'In general it is absurd to suppose it possible that water-animals should originate on dry land and transfer to the water: most of them even lack feet. Yet in describing their original structure he says that they began on dry land and migrated to the water.'⁴ For Aristotle the whole cosmic structure, and the species and genera which it contains, were fixed from, and to, all eternity. More than once⁵ he notes that while mortal creatures cannot live for ever as individuals, they share a kind of collective immortality in the permanent and invariant reproduction of their kind.

¹ Mentioned in *De an.*, 431a2-4 and here on p. 225 above. Cf. his criticism of Speusippus (and the Pythagoreans) at *Met.* 1070b30-38. See also R. Müller, 'A. und die Evolutionslehre', *Deutsche Ztsch. f. Philos.* 1969, and Grene, *Portrait of A.*, index s.v. 'evolution'.

² *GA* 761b28-31. On spontaneous generation see p. 236 above, and on the tradition of earthborn men Guthrie, *In the Beginning*, 21-8 and ch. 3.

³ Picturesquely called 'earth's entrails' in Greek (γῆς ἐντέρας, *GA* ib. 1.26). I agree here with Peck (Loeb ed., p. 362) and Lloyd (*Arist.*, 89), though Platt's note *ad loc.* in the Oxford translation is interesting if a little naïvely expressed.

⁴ That Empedocles had got it the wrong way round does not make A.'s comment more appropriate. (It is fair to add that this is not his only argument.)

⁵ E.g. at *GA* 731b31-32a1. Cf. *De an.* 415a26-b1: 'The most natural activity of living things... is for each to create another like itself, be it animal or plant, that so far as they are able, they may share in the everlasting and divine.'

Sensation

Still less did Aristotle's observations lead him to any kind of nominalism such as Buffon's. The following is from E. Cassirer's *Philosophy of the Enlightenment*, 79:

Since nature proceeds from one species, and often from one genus, to another by imperceptible steps so that there are many intermediate stages which seem to belong partly to this, and partly to that, genus [pure Aristotle, as we have seen], no other alternative remains than to make our concepts elastic in order to represent the flexibility of natural forms. Henceforth Buffon tends toward outright nominalism; he states that in nature there are only individuals, there are no species and genera.

Aristotle remained too much of a Platonist for his thoughts to take this turn.

(5) SENSATION

(a) General theory¹

The exercise of sensation² is an activity of the whole animal, body and soul together, an excitation of the soul through the body.³ Following Aristotle's own injunction, we shall start with the *objects* of sense. These are first divided into three classes, described in *De an.* as follows:

418a6-25. In dealing with each of the senses we must speak first of their objects. 'Object of sense' is applied to three classes, two of which we call essentially, and the third incidentally perceptible. Of the first two kinds, one is special to each sense, the other common to all. By special I mean something which cannot be perceived by another sense, and in respect of which error is impossible, as colour is the special object of sight, sound of hearing, flavour of taste. Touch indeed has more than one variety [of object],

¹ Much information about A.'s theories of sensation will be found in Beare's *Greek Theories of Elementary Cognition*. For some recent work see the bibliography in Hamlyn's translation of *De an.* 2 and 3, and note his book *Sensation and Perception*. This and D. M. Armstrong's *Perception and the Physical World* are discussed by B. R. Fleming, 'The Nature of Perception', *R. of Metaph.* 1962-3, 259-95. For comparative purposes the collection of 20th century readings in *Perceiving, Sensing and Knowing*, ed. Swartz (1965) may be suggested. A criticism of Hamlyn on Aristotle is offered by A. Andriopoulos, 'An Examination of A.'s Theories of Perception', *Platon* 1967, 45-76.

² I shall most often retain this word for what A. calls αἴσθησις, though it includes also what would nowadays be distinguished as perception. For the distinction cf. Hamlyn, *CQ* 1959, 6: 'the faculty of sense-perception [as distinct from bare sensation] is that faculty by means of which we are able to characterize or identify things as a result of the use of our senses'; but as he adds on p. 11, 'ordinary Greek makes the drawing of such a distinction difficult if not impossible'. One recalls A.'s definition of αἴσθησις in *An. Post.* as δύναμις σύμφυτος κριτική - a power of discrimination, of telling one thing from another (p. 181 above). On αἴσθησις see also vol. v, 74f.

³ *Div. per somn.* 464a8-11; cf. *De sensu* 436a6-9.

but each sense judges of its own, and does not err in reporting 'this is colour' or 'this is sound', but only in what or where the coloured object is, or what or where it is that is making the sound.

Such then we call the special objects of each sense. Common are motion, rest, number, shape, size.¹ These and their like are not peculiar to any one sense, but common to all: for instance, a movement is perceptible both by touch and by sight.

An example of an incidental sensible is the sight of a white object as the son of Diares. He is perceived incidentally because what is perceived [the son of Diares] is only an accident of the white patch.²

Of the essential sensibles, those proper to a single sense are sensible in the strictest sense of the term, and it is to them that each separate sense is by its nature adapted.

We have then

- (i) the special objects of each of the five senses, e.g. colour or sound;
- (ii) objects perceptible by more than one sense,³ e.g. motion, shape, size;
- (iii) objects of which we become aware through the senses, although as themselves they are only indirectly or incidentally objects of sensation. Such are the concrete wholes to which sensible qualities – the direct objects – belong.⁴

¹ The list is repeated elsewhere with additions. References are best given by Graeser in *Symp. Ar.* vii, 92 n. 3.

² I.e. when we say we see the son of D. we are not being affected by the white patch (an essential object of sensation) as such, but by something incidental to it. Cf. Graeser, *o.c.*, 72f. in preference to Ross *ad loc.*

³ A. says 'by all'. His examples do not support this, but no doubt he is thinking that if not special to one, they must be perceived by κοινή αίσθησις, sensation acting in its general capacity. However, in *De sensu* he is more cautious (442b7). On κοινή αίσθησις see pp. 295ff. below.

⁴ In this classification the common as well as special sensa are perceptible καθ' αὐτά; only the third class are so κατὰ συμβεβηκός. (Cf. 425a27–28 τῶν δὲ κοινῶν ἥδη ἔχομεν αἰσθησιν κοινὴν οὐ κατὰ συμβεβηκός.) To Graeser (*Symp. Ar.* vii, 69) this appeared to be in conflict with a statement in bk 3, 425b14–15, which runs ἀλλὰ μὴν οὐδὲ τῶν κοινῶν εἶναι τ' εἶναι αἰσθητήριον τι ἴδιον ὧν ἐκάστη αἰσθῆσιν αἰσθανόμεθα κατὰ συμβεβηκός. There is no conflict if it is translated in the way I have always thought natural and correct, viz: 'It cannot be that there is a special sense-organ for the common sensibles and that we perceive them only incidentally by each several sense.' The point lies in ἐκάστη. What is incidental is the fact that we perceive the κοινὰ by one sense rather than another. Motion is essentially an object of sense, though it is accidental that we perceive it by sight rather than by touch, or for that matter hearing (as the moving object approaches and passes us). If I have understood Graeser, this is the result which he himself reaches on p. 85 after a long and complicated discussion (also Hamlyn, *Monist* 1968, 197).

Sensation

Class (iii) are in fact what a philosopher of today would call objects of perception rather than sensation (p. 291 n. 2 above).

In *De sensu* objects which might seem to correspond to class (iii) here, i.e. concrete wholes, are assimilated to class (ii) as things perceived by sense as a whole, not differentiated into the sub-faculties of sight, hearing etc., 'common, not accidental, sensation' (*De an.* 425a27-28). There, however, he is considering a rather different question. The accidental sensibles of *De anima* were introduced to justify (as he was anxious to do wherever possible) popular language, which says that we *see* Socrates, that is, that sight can enable us to recognize directly a complex object like a person, so that as soon as we see him we can say, for example, who his father is. If such language is allowable, sight seems to tell us many things beyond the province of sensation. The passage of *De sensu* on the other hand considers such objects only in so far as they are complexes of sensible qualities. His question there is: How can we perceive the sweet (or sweetness) by sight? When for instance we are looking at a lump of sugar¹ and make the judgement 'This is sweet', he claims that we make use only of sensation, but, as in the perception of certain single properties like size and shape, of sensation as a single undifferentiated faculty.

De sensu 449a8-20. There must be one part of the soul through which it perceives all things, as noted earlier, though it perceives different kinds through different organs. Perhaps then when it is undivided in its activity what perceives sweet and white is the same, but when divided it is different for each. Is not the soul in like case with the objects? What is numerically the same is both white and sweet and has many other properties, inseparable perhaps but nevertheless differing in their being. We must assume it to be the same with the soul: the universal faculty of sensation is numerically one and the same, but different in its being, either generically or specifically, in relation to its objects. What perceives is a unity in fact but not in definition.²

¹ The natural example for ourselves. What A. had in mind is less certain. λευκός can mean pale as well as white, so perhaps a clear, light honey, the colour of the 'white gold' (λευκός χρυσός, i.e. electrum) of Hdt. 1, 50.

² In a different way it is true that perception by one sense of what is ἕκαστον to another is κατὰ συμβεβηκός. What is sweet may be identified by sight, but strictly speaking, in recognizing its sweetness by this means the soul is not employing any of the five separate senses in its proper capacity (καθ' αὐτήν). The double use of κατὰ συμβεβηκός is well brought out at *De an.* 425a27-31: 'Of the common sensibles we have sensation as a whole, not incidentally (ἀσθησιν κοινήν

Aristotle touches briefly on the question of the possibility of error, about which Plato had said so much in the *Theaetetus*, and his verdict is that in perceiving the special object of a particular sense we cannot be mistaken. If we are using our senses to perceive either (a) a quality or phenomenon like size or motion, perception of which is not confined to a single sense, or (b) a concrete object which is only incidentally a sensum, through possessing qualities which are essentially sensa, we are liable to error, and more so in the case of common than of incidental sensa.¹ If we limit ourselves to saying 'What I perceive is something white' we cannot go wrong. If we go on to say either 'The white² that I see is six feet high' or '... is a man', we may be mistaken.

The infallibility of the separate senses, if pressed, might seem to commit Aristotle to a Protagorean theory of 'man the measure' according to which each man's sensations are true for himself even if for no one else.³ This theory Aristotle expressly contradicted.

Met. 1062b36-63a5. It is foolish to attend impartially to the opinions and imaginings of disputants, for obviously one side must be wrong. This is evident from what happens in sensation. The same thing does not seem sweet to some and bitter to others unless the sense-organ of one party, by which they discriminate between the flavours in question, is perverted or damaged. This being so, we must take not these but the others as the standard [lit. 'measure'].

Also one would expect him to be aware that there is such a thing as

οὐ κατὰ συμβεβηκός) . . . But the separate senses perceive *each other's* proper sensations incidentally, not in their separate capacities but in so far as they are one.' Cf. also the comments of Themistius and Philoponus quoted by Graeser in *Symp. Ar.* vii, 95 n. 23.

¹ 418a11-16, 428b18-25, 430b29-30, *De sensu* 442b8-9, *Met.* 1010b2-3 (with whatever reading). On the order of fallibility see Hamlyn *CQ* 1959, 15. I. Block, in an illuminating article ('Truth and Error in A.'s Theory of Sense Perception', *PQ* 1961), discusses the question in the light of the modern distinction between the 'sense-datum' and 'material-object' modes of speaking.

² Block (*PQ* 1961, 2) translates 'the white object', and sees this as a difficulty in the sense-datum explanation. But τὸ λευκόν can equally well mean 'whiteness'.

³ Plato, *Theaet.* 152c: According to Protagoras 'Things are for each man such as he perceives them to be. Sensation, as being knowledge, is of what is always true and infallible.' (Cf. vol. v, 75f.) At 428b18-19 A. apparently qualifies the infallibility of the special senses by adding 'or subject to the minimum of error'. Graeser calls this 'the much-disputed restriction', but since (a) it is immediately contrasted with a second class about which ἡδὴ ἐνδεχεται διαφεύεσθαι and (b) in both *De sensu* and *Met.* the qualification is absent (πρὶς δὲ τῶν ἰδίων οὐκ ἀπαρτίζονται [αἱ ἀσθηταί]), it can hardly be significant. A. is simply exercising his customary caution, rather than making a slip as Block suggests. On the other hand Block's reminder (p. 6) that the regularities of nature in general occur ἡ αἰετὶ ὡς τὰ τὸ πάλαι is timely.

Sensation

colour-blindness or tone-deafness.¹ The explanation probably lies in his theory of the general nature of sensation, namely that it consists in the reception by the percipient of the perceptible form of the object. If so, he is for once guilty of what he so often condemns in others, of using an argument a little too *logikon*,² not quite keeping the balance between deductive argument and experience. He could, however, always appeal to another of his general principles. He is speaking of events in the ordinary course of nature, which brings things about 'either always or for the most part'.³

(b) Common sensibles and the common sense

Since there are common sensibles (*koina*), objects of more than one sense simultaneously, there must, as we have seen, be a 'common sense', or 'sensation in common', as Aristotle calls it.⁴ In other words, the faculty of sensation can act as a whole, not differentiated into the five senses. Sensation, as is only consistent, is a unity in the same sense as soul, of which it is a particular aspect: to use Aristotle's favourite and handy phrase, it is numerically one but divisible in essence or form.⁵ Soul (life) can be defined generally as the form or entelechy of the living body, but manifests itself differently through different organs. Sensation, itself one of these manifestations, can exercise its *dynamis* in different ways, as touch, sight, hearing etc., but 'There is too a common faculty accompanying all the separate senses... There is a single

¹ It is true that at 418a15 he waters his statement down to a truism by saying 'Sight is not deceived in perceiving *that* it is colour, nor hearing *that* it is sound' with which they are confronted. But Themistius (105, 23 Heinze) was obviously right to interpret this as 'Sight does not misconceive *what* the colour is, nor hearing *what* is the sound.' A, himself continues '... but what or where the coloured object is', and at 418b21-22 he rephrases his dictum as 'To say "It is white" cannot be false, but in claiming that the white patch is this or that object, error is possible.' This is evidently *what* he meant all along.

² On arguing *logikōs* see p. 197 above.

³ See p. 173 above, and Block, *PQ* 1961, 6. A.'s psychology bristles with little problems of detail. At 430b1-3 (cf. also 432a11-12) he says that error (or falsehood, ψεύδος) only occurs in *synthesis*, putting together more than one element, 'for even if [one says or thinks that (the Greek omits the verb)] the white is not white, he has combined not-white with white'. But according to 428b12: *ὅτι μὲν γὰρ λευκὸν οὐ ψεύδεται*. Does the later passage refer to deliberate lying? Hardly; but in the earlier one there is no question of *synthesis*, but only of a single act of sensation.

⁴ *κοινὴ αἰσθησις*, 425a27 (p. 293 n. 2 above), *Mem.* 450a10-11, *PA* 686a31.

⁵ 427a2-3 *ὅρ' οὖν ἅμα μὲν ἀριθμῶ ἀδιαίρετον καὶ ἀχωριστὸν τὸ κτῆνον, τῷ εἶδει δὲ κεχωρισμένον*; cf. 424a25 *ἔστι μὲν ταῦτόν τὸ δ' εἶναι ἕτερον* of a sense and its organ.

faculty of sensation and a single master sense-organ' (*Somn.* 455a15-16, 20-21).

'A single organ.' As there is one central faculty expressed also in each of the five senses separately, so for Aristotle there is a central master organ¹ to be to the senses as the whole animal body is to soul. This in sanguineous animals is the heart, whence all the blood vessels proceed,² and which is also the source of an animal's life and movement and indeed of life itself.³

PA 666a33-b1. An animal is distinguished by its power of sensation, and the part that first possesses that power is the part that first has blood, i.e. the heart, for the heart is the source of blood and the part in which blood is first present.⁴

It provides indeed that 'innate natural heat' which is necessary to life as a whole.⁵

Most modern commentators express their disappointment that Aristotle, for all his biological research, should have abandoned the brain for the heart as the seat of sensation. Some earlier thinkers had made the heart, or the 'pericardial blood', the seat of thought,⁶ but

¹ τὸν αἰσθητήριον ἐν τῇ κοίτῃ ἐστὶν αἰσθητήριον ἢ δὲ τὸς κατ' ἐνέργειαν αἰσθητοῦ ἀναγκασίον ἀπαντῶν (*Iuv.* 467b28-29); τὸ κύριον αἰσθητήριον (*Somn.* 455a21). 415a14, which says that there is no special (ἰδίον) sense-organ for the κοίτη, is not, as Hamlyn claims (*Monist* 1968, 205), a contradiction of this.

² ἡ δὲ καρδία τῶν φλεβῶν ἀρχή (*PA* 665b15-16 and elsewhere). Bloodless animals have something 'analogous' to the heart; see *GA* 735a22-26, *PA* 647a30-31, *De resp.* 474b2-3 etc. The physical connexion between the heart and the separate sense-organs is provided by certain *poroi* - 'channels' - a word of wide meaning including, but not confined to, veins. On *poroi* see e.g. *GA* 781a20-23, and Lloyd, *Symp. Ar.* vii, 222 f. A. was not aware of the true function of the nerves, and Sherrington (*Man on his Nature*, Pelican ed., 197) refers to 'the lack in his time of distinction by dissection of nerves and blood-vessels'. See on this Beare, *GTEC*, 331f., Solmsen, 'Gk. Phil. and the Discovery of the Nerves', *Mus. Helv.* 1961.

³ *PA* 665a10-14, *Somn.* 455b34-56a2, *Iuv.* 469a17-18. Some have argued (e.g. Ross, ed. of *PN*, p. 12) that the incorporeality of the soul in *De an.* precludes its location in a particular part of the body, and hence have drawn conclusions about the chronological priority of *PN* to *De an.* But in A.'s view the soul's incorporeality is no bar to its location in a part of the body. One has only to look at *Iuv.* 467b13-15: 'Soul has been defined elsewhere, and it is clear that it is essentially incorporeal, and yet also plain that it is situated in a certain part of the body', where, as Ross himself says, the reference is to *De an.* 414a19-22.

⁴ 'First' is meant literally, first in time. Cf. the context in *PA* 3 cl. 4, especially 666a10-11, and *Iuv.* 468b28 and *GA* 743b25-26.

⁵ *Iuv.* 469b6-11, cf. *HA* 514a18. The heart therefore can be said, metaphorically at least (note the ὥσπερ), to 'kindle' the soul (*Iuv.* 469b16; cf. 478a29-30), and it is the central organ of digestion, of which the innate heat is the agent. This vital heat is not fire, but related rather to the divine fifth element, *aither*, of which the heavenly bodies are made (*GA* 736b23-37a7).

⁶ E.g. Empedocles and some Hippocratic writings (vol. II, 229 with n. 2). In choosing heart rather than brain A. was following the Sicilian in preference to the Coan medical school. See

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Aristotle was of course well aware that others, from Alcmaeon to Plato, had located the physical vehicle of sensation and thought in the brain, a view which he mentions and criticizes more than once. There are two points to note here.

(i) He had his reasons, based on observation within the limits of the science of his time.

(a) The insensitivity of the brain to handling or wounding.¹

(b) His belief that it was bloodless (*HA* 514a18), whereas sentient parts always contain blood and loss of blood brings loss of consciousness.

(c) His familiarity, exceptional for his time, with the lower forms of animal life. Some invertebrates appeared to have no brain, though manifestly sentient (*PA* 652b23-26).

(ii) Although the heart was the central sensorium, the brain was by no means so divorced from sensation as some commentaries might suggest. Indeed, to quote William Ogle, the translator of *De partibus*, Aristotle 'assigned to it an office scarcely less important than that he attached to the heart. It is true he made this latter the actual sensory centre, but he represented it as so directly dependent upon the brain for the discharge of its functions, and so instantaneously affected by any change which occurs in this organ, that heart and brain come as it were to form one consolidated organ.'² Indeed his views on the brain may sound a little paradoxical. It is itself 'not responsible for any of the sensations at all', yet at the same time the senses of sight, hearing and smell are usually (sight always) in the head 'because of the nature of their organs'. He proceeds to give his reasons for the location.³ The eye, ear and nose are in close connexion with the brain, from which the relevant sensations pass via *poroi* to the heart, for to that the *poroi*

Jaeger, *Diaktes*, 214f. and Wellmann, *FGA* I, 15f. A sentence in Plato's *H. Maj.* (292 d) suggests that the brain figured in common speech much as it might today. Upbraiding Socrates for his stupidity, his imaginary opponent says, 'You might as well be a stone sitting beside me, a real millstone, with neither ears nor brain.'

¹ *PA* 652b2-6, 656a23-24. Cf. Sherrington, *Man on his Nature* (Pelican ed. 197, 217) or Lloyd in *Symp. Ar.* VII, 234 n. 36.

² Ogle in Oxford trans., note on 653b5-8, where A. observes that the cardiac heat is very responsive to influence, and quickly becomes sensitive to any change or affection of the blood around the brain.

³ The brain and its functions are the subject of *PA* 2 ch. 7, with more in ch. 10, 656a13ff. See also G. E. R. Lloyd's paper in *Symp. Ar.* VII, especially pp. 222-4. For the sense of smell cf. 438b25 διὸ καὶ τῷ περὶ τὸν ἑγκέφαλον τόπῳ τὸ τῆς οσφρήσεως αἰσθητῆριόν ἐστιν ἴδιον.

conveying sensations all extend. In these cases therefore the brain acts as an intermediary.¹

To end with a biologist's comment (Sherrington, *Man on his Nature*, Pelican ed., 1977):

How came it that Aristotle, the 'father of psychology', missed the localization of the mind in the brain? [There follow the reasons, then] Despite this it was Aristotle, by his description of mind, who made to that theme perhaps the greatest contribution not only of antiquity but for our own era so far as the Renaissance. His faulty 'localization' was soon corrected, and his description of the biological make-up of the mind was taken over and became the paradigm for centuries. His conception of a 'common sensorium', given in the *De Anima*, was fundamental and fertile during more than eighteen centuries.

Aristotle's opinion of the brain, says Sherrington, was that 'it was concerned with that one of the four cardinal qualities, "cold", which was the specific contrary of the cardinal "heat" of which the heart was the focus and centre. The brain was therefore in his view connected with the organ of mind, namely the heart, and served the mind although it was not the seat of the mind.'²

The common or 'unspecialized' sense, then, is not a sixth sense apart from the others. There are only five senses (*De an.* 3 *init.*), and the 'common sensibles' are perceived as a kind of 'by-product' of these. (The word is Block's.) One does not perceive a shape by itself, but a coloured thing possessing a certain shape. Its colour is perceived through sight alone, but our perception of its shape, size or motion is not due to sight in particular but simply to the general faculty of sensation, since these could equally well be perceived by some other sense.³

¹ The eye is actually said to be 'constructed from the brain' (ἀπὸ τοῦ ἐγκεφάλου συνίστηται, *De sensu* 438b 27-29 - 'an offshoot of it' Ogle, Ross). That the πόροι from all sense-organs reach to the heart was true for A. even if the passage where this is most explicitly stated is suspect (*GA* 781a 20-21, Peck in Loeb ed. 563 f.). Cf. 744a 2-5: "Smell and hearing are passages full of connate *pneuma*, connecting with the outer air and terminating at the small blood-vessels around the brain which extend thither from the heart" (Peck's trans.). (Both ἀκοή and ὁσφρησις are occasionally used for their organs, as at 425a 4-5.)

² For the coldness of the brain see e.g. *De sensu* 444a 10, *PA* 652a 27-28.

³ It is a fair question why, if κοινή αἰσθησις is pure sensation like sight or hearing, it is not infallible like them. On this I can do no better than refer to Block's aforementioned article (p. 294 n. 1), with its 'teleological explanation' of the structure of the separate sense-organs. I have no other to offer, though it is disappointing that, in arguing that only the special senses

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To sum up, the most important functions fulfilled by sensation in its undifferentiated capacity are these:

(i) The perception of properties apprehensible by more than one sense, such as size, shape, movement, number, unity.

(ii) In *De sensu*, the perception as a whole of a complex object like a piece of sugar, which contains a number of qualities that are the proper objects of different senses.

(iii) Discrimination between the objects of different senses (*Somn.* 455 a 17-20). What tells that sweet is different from white must be one and the same, and 'it must be sensation because they are sensibles'.¹

(iv) Self-awareness, or perception that one is perceiving.²

Why should Aristotle widen the field of sensation in this extraordinary way? Plato, in the argument of the *Theaetetus* that sensation is not knowledge,³ had also spoken of *koina*, but these were not objects of more than one sense, or indeed of sensation at all. There is no common sense or sensorium. No sense can perceive the object of another ('the sweet by sight'), nor is it by sensation that a man understands what each sense is (its *ousia*) and that one is different from another. Identity and difference, similarity and dissimilarity, essence, existence and non-existence are concepts cognized by the *psychē* (which in its Platonic context may safely be translated 'mind') all by itself (αὐτῇ δι' αὐτῆς) without recourse to any bodily instrument. Touch makes us aware that an object is hard or soft, but the essence and contrariety of hardness and softness the *psychē* judges alone, by recurring to them and comparing one with the other (186 b). Animals and men alike experience sensations from birth, but to go beyond them in this way involves reasoning and is the outcome of a long and demanding

have organs 'purpose-built' by nature, he takes no account of the heart, the κοινόν (and κύριον) αἰσθητήριον, the ἀρχὴ τῆς αἰσθήσεως τῆς κοινῆς (*Somn.* 456 a 5-6).

Still, A.'s own expressions are scarcely consistent. At *De an.* 418 a 24-25, though the κοινὰ themselves are καθ' αὐτὰ αἰσθητά, only the ἴδια are κοινὰ αἰσθητά, 'to which the essence of each sense [or perhaps sense-organ as αἰσθητοὶ occasionally elsewhere] is naturally adapted'.

¹ 426 b 12 f., a somewhat simplistic argument which does not compare favourably with Plato's in *Thē.*

² *Somn.* 455 a 15-16. Cf. *EN* 1170 a 29-32 and *De an.* 3 ch. 2 (though this last is justly described by Hamlyn as 'difficult and obscure'); Beare, *GTEC*, 288-90. Kahn also deals with this question in the course of his article in *AGPh* 1966.

³ 184 b-86 e. See vol. v, 101-3, and cf. Beare, *GTEC*, 260 ff.

education.¹ This is surely right. Seeing and hearing are sensations, but to assert that sight and its object are different from hearing and its object is to express an intellectual judgement. Nor do we perceive in a single act of sensation that an object is both sweet and white but by a combination of sensation with memory or association, *seeing* that the sugar is white and of a certain shape and size, *remembering* that all objects which we have seen looking like that have tasted sweet, and concluding inductively that this piece will be so too.

At the same time, if we try to understand Aristotle's mind as well as criticize him from our own point of view, we may see that he was not just blindly refusing to recognize a distinction made clearly and correctly by Plato.² It shows rather how a pioneer attempt to argue *physikōs* might lead for once to an error from which the *logikōs* was free. Apart from his constant wish to do full justice to ordinary language ('Look! I see Socrates'), his enlargement of the scope of sensation most probably resulted from his observation of the smooth and gradual transitions from one natural form to another and the consequent impossibility of drawing a sharp line of division between some of the widest genera. He was fascinated by the more elementary forms of life. As already noted, some creatures with sensation appeared to lack a brain, which was one of his reasons for making the heart the central organ of sensation. So here it would seem to him absurd that animals with more than one sense should be unable to distinguish between them, although for Plato this discrimination was the work of soul acting apart from sensation, i.e. of thought. Also they must be supposed capable of 'perceiving the sweet by sight', in other words of recognizing when they *see* it something that *tastes* good and should therefore be pursued. He could not attribute it to memory, though he believed irrational creatures to be capable of 'persistence of the sense-impression',³

¹ ἀναλογισματα 186 c; knowledge is not in the impressions of sense, ἐν δὲ τῷ περὶ ἐκείνων συλλογισμῷ 186 d; ἐν χρόνῳ διὰ πολλῶν πραγμάτων καὶ παθῶν 186 e.

² With what follows cf. Beare, *GTEC*, 276: 'The difference between [Plato] and A. on this point was mainly a difference of method. He chose to classify all functions of synthesis as parts of the activity of the understanding. This, indeed, as an epistemologist or metaphysician, he was wise in doing; but for the purposes of empirical psychology Aristotle's attribution of synthesis to the faculty of sense is unquestionably sound.'

³ μνή τοῦ αἰσθηματος without λόγος, *An. Post.* 99b 36-100a 3. Another way of putting it is that they have memory without the positive power of recollection, 'which is a sort of inference' (*Mem.* 453a 7-10).

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because if anything beyond sensation were involved it would need not only that but some power of 'putting two and two together', i.e. *logos*, which was more restricted. Plato described reasoning as a silent conversation of the *psychē* with itself (*Soph.* 263e), of which judgement (*doxa*) is the outcome, and Aristotle would maintain that this is impossible for other animals: only man has the gift of *logismos* (*Met.* 980b27-28). Therefore the powers in question must be supposed inherent in sensation itself; and here his very reasonable conception of sensation as 'one and the same numerically but with different functions or aspects' comes to his aid and provides a convenient solution.¹

(c) *How sensation works*

This is explained in general terms in *De an.* 2, 12. I translate from 424a 17 to b 3.

Of sensation in general and as a whole, one must understand that it is a power of receiving sensible forms without the matter, as wax receives the device on a signet-ring without the iron or gold: it takes on the gold or bronze device, but not *qua* gold or bronze. Similarly the faculty of perceiving anything is affected by a coloured, flavoured or audible object, but without reference to what it is – only in so far as it has a certain quality or relationship.² The sense-organ is primarily that in which such a power resides. The two are the same thing, though different in essence; i.e. what perceives must be corporeal but the sense, that is, the being-capable-of-sensation, is not a body but a certain relationship and power of the body.

This explains (a) why excess in the objects of sense destroys the sense-organs. If the motion is too strong for the sense-organ, its structure is disturbed, just as concord and tone are destroyed when the strings are forcibly struck; (b) why plants lack sensation, though they have a portion of soul and are affected in some ways by tangible objects, e.g. are made cold and hot. The reason is that they have not the requisite mean, nor any principle enabling them to receive the forms of the sensibles, but are affected by the matter as well.

Sensation is the power to receive sensible forms – colour, sound etc. – without matter. The faculty (*dynamis*) of sense and its organ are

¹ Later we may discover some further justification for his attitude (p. 303 with n. 4). This brief account differs in several ways from Hamlyn's on κοινή αίσθησις (*Monist* 1968).

² As Ross notes, the main difficulty at 424a28-29 is the meaning of that polysemantic word λόγος. It seems to mean, he suggests, the relation of the object to the animal perceiving it. It could also mean 'structure', the internal relation of its parts, as perhaps at line 31.

the same but their essence is different. This simply exemplifies a universal ontological principle. A seeing eye is one thing, but like every separately existing physical object it is, philosophically speaking, a compound (*syntheton*; cf. pp. 103, 282 n. 3 above); its material constituents, with qualities like size and texture, would obviously be defined differently from its capacity, sight. Sensation takes place through the agency of a material organ so constructed as to be capable of being acted upon in this way by the object perceived; i.e. potentially informed by its sensible form; and this potentiality is actualized in the occurrence of the sensation. Thus Aristotle has freed himself from those earlier explanations of sensation which stopped short at the interaction of material bodies. Empedocles believed the sense-organs to be furnished with 'pores' of just the right size to admit actual material particles of a certain degree of fineness. The atomists with their *eidōla* thrown off from surfaces offered a similarly materialistic view, 'a very natural development of the Empedoclean theory of effluences', as Burnet called it. Neither saw any need to go further, and Aristotle expressly criticized them for their materialism (426a26-27).

The simile of the wax and the metal seal might seem to herald a similarly materialistic theory from Aristotle, did we not know his practice of using analogies to help out his meaning, with full consciousness of their imperfection. The present one is introduced like a simplified diagram to bring out a single point, the antecedent possibility of receiving a thing's form without its matter. To suppose it a complete parallel to what happens in sensation imports an unwarrantable crudity into his psychology. The imprinting of the seal on the wax is a purely material event demanding direct contact between the two objects, and the wax is altered solely in its outward, material shape. No further result supervenes. This is no complete parallel to what happens in sensation. The faculty (*aisthēsis* or *dynamis*) of sight cannot become green in perceiving greenness, nor the faculty of touch warm in perceiving warmth. The *organs* of sight and touch do become informed in this material way; the flesh becomes warm and the eye (or the sensitive part of it) coloured;¹ but Aristotle insists on the difference

¹ To be precise, the moist inner part, the *kōphē*, which as A. says at *HA* 491b20 is that with which we see.

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between the physical alteration of the sense-organ, a necessary precondition of sensation, and sensation itself, a purely psychical event.¹ The difference between eye and sight is as real as (in fact identical with) that between body and soul, for as we have seen, soul:body :: sight:eye (412b18, p. 283 above). Aristotle's advance is well seen in the reason he gives why plants lack sensation (424a32b-3), namely that they can only be affected when the matter itself of an external object acts on them – the very way in which Empedocles and Democritus supposed sensation to take place. Again, in *De sensu* (438a5ff.), he quotes the opinion of Democritus that sight is only the reflection of an object in the eye, and retorts; 'Absurdly enough, it did not occur to him to wonder why only the eye sees, but no other reflecting surface.' Such crude material action Aristotle could no longer accept as an explanation of sensation.²

(d) *Sensation in Aristotle's philosophy*

Sensation means that because some material organs of animals have a certain relation (λόγος, μεσότης) to the objects of sense, when they themselves are materially altered by them a result of a quite different order supervenes, which Aristotle has called a movement or alteration of the *psychê*. (See e.g. 415b23-25.) This essential point has been well summed up by Heinrich Cassirer as follows:³

Sensation is a purely psychical function, but its psychical power is directed to events which are communicated to it through bodily organs and take place there. The perception of warmth for example is not to be confused with the material affection of becoming warm. It is a judgement and not a bodily alteration.⁴ On the other hand this judgement can only occur with reference to the events which take place in the bodily organs, which must first communicate the presence of the external objects to the soul. It is this, that events must first take place in the organs, which explains the existence of *sensa* that are perceptible to too intense a degree. They are too strong, not for the soul's perception, but for the organ's physical capacity of receiving.

¹ That A. in his carefree way just occasionally uses αἰσθησις when he means αἰσθητήριον should no longer trouble us. (Passages in Bonitz, *Index*, 20215-26. Cf. p. 121 n. 1 above).

² For a more critical comment see Düring *Arist.*, 577.

³ *A.'s Schrift von der Seele*, 153f., translated.

⁴ Have we perhaps here some further justification for the inclusion among sensibles of the 'common' and 'incidental' sensibles, as opposed to Plato's view of them? Cf. also Hanson on pp. 308f. below.

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The conclusion that what is perceived in the act of sensation is form, i.e. something non-material, even though limited to sensible form, links up with indications of Aristotle's theory of knowledge which we have met elsewhere. When the organ of sight becomes *coloured*, undergoing a material alteration, the soul becomes *aware of colour*. It cannot undergo material alteration, therefore the awareness means reception of a form in the philosophical sense, an immaterial essence. Now in the epistemology of the *Posterior Analytics* there occurred this sentence: 'Although we perceive the individual, sense-perception is of the universal, e.g. of man, not just of Callias a man.'¹ We know too that the *eidos* of something, though it should be as far as possible removed from the universal (its *eidos* or essence cannot be defined simply by discovering its genus), is nevertheless not peculiar to one individual only. In speaking of essence, which for Aristotle must be definable, one cannot go below the *infima species*. These philosophical notions are in his mind as he explains sensation. When the eye is for the first time confronted by a particular white object (τὸ τί λευκόν), the soul which sees it becomes for the first time aware of τὸ λευκόν — whiteness.

It might be said that Aristotle has made it difficult to distinguish sensation from thought, if sensation is to be regarded as an equally psychical function and concerned with the apprehension of forms. But (i) there is the difference between sensible and intelligible forms, and the necessity of bodily organs as mediators between sensible forms and the soul. Aristotle's favourite example is the difference between snubness and concavity.² The sensible form is more intimately connected with matter in that it is confined to a particular *kind* of matter, in this instance flesh. It is perceived by the soul in sensation, but to have knowledge of concavity (a geometrical concept) the *psychē* must proceed by itself to higher stages of abstraction and generalization. (ii) It is only in a very rudimentary way that sensation implants the universal. In the *Analytics* the example is 'man', but this does not of course mean that without going beyond the perception of individual

¹ 100216-b1. See p. 183 above.

² E.g. *Met.* 1015b32-34: 'They differ in that the snub is conjoined with matter (for what is snub is a concave nose), but concavity has no element of sensible matter.'

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men we can have knowledge (*epistēmē*) of the species.¹ Knowledge implies ability to define, and to acquire that, the soul must go beyond sensation. The theory does mean, however, that here as everywhere we have only an ascending scale, not a series of sharply divided and disconnected faculties. It is true enough that for Aristotle the *physikos* the distinction between sensation and thought is less cut-and-dried than it was in the more speculative works of a Plato.

If Aristotle's application of the doctrine of matter and form to sensation represents an advance on earlier materialism, nevertheless a first acquaintance with his theories as outlined in the general parts of *De anima* may leave a vague feeling of dissatisfaction. The account so far given seems curiously abstract. That the *psychē* receives through the sense-organ the form of the perceived object is a general statement which calls for some account of the physical processes through which it does so. If sensation is the outcome of bodily changes, even though not identical with them, an appropriate explanation must be in part physical also. Two points here:

(i) When speaking of the activity of soul in general, or even of the sensitive soul, Aristotle shows himself uneasy. If you want explanations in general terms, he says in effect, these are all I can give, and they do state the *common* principles according to which all the separate activities of soul, and all the individual senses, work. But a relevant and scientific explanation (one that is *olkēion* and *φυσικόν*) calls for consideration of each of its aspects separately, for each is different in definition and has its own method of working, though all are activities of one and the same living creature. 'It is evident that an account of *each* of these is at the same time the most relevant account of soul.'² With this goes his criticism of earlier philosophers who thought they could describe the nature of the soul alone, neglecting the body with which it formed an indissoluble unity (pp. 142f. above). *De anima* is for the most part a philosophical treatise setting out the philosophical basis, or underlying principles, of life and sensation, but the full explanation of how the living creature works does not belong to such

¹ Cf. 87b8, p. 191 above. See also pp. 198ff.

² 417a12-13; cf. p. 283 above, and *De sensu* 439a6-12.

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a treatise but rather to a scientific study of physiology rooted in observation.

(ii) Following on that, Aristotle does offer, partly in *De an.* itself but mostly in the treatises now grouped together under the title *Parva naturalia*, concrete and physiological answers to such questions as 'What is sound?' or 'How does the eye see?' The answers may seem more or less inaccurate today, depending on the extent to which advancing science has superseded them, but they are definitely scientific explanations according to his lights. A general survey of his philosophy cannot pursue these studies in detail, but their existence and importance must not be overlooked. The opening sentences of *De sensu* set out the programme, and a short passage on the eye (438a12-25) will serve to illustrate the scientific, rather than philosophic, atmosphere of the whole.¹

True, then, the visual organ is composed of water, yet vision appertains to it not because it is so composed, but because it is translucent—a property common alike to water and to air. But water is more easily confined and more easily condensed than air; wherefore it is that the pupil, i.e. the eye proper, consists of water. That it does so is proved by facts of actual experience. The substance which flows from eyes when decomposing is seen to be water, and this in undeveloped embryos is remarkably cold and glistening. In sanguineous animals, the white of the eye is fat and oily, in order that the moisture of the eye may be proof against freezing. Wherefore the eye is of all parts of the body the least sensitive to cold: no one ever feels cold in the part sheltered by the eyelids. The eyes of bloodless animals are covered with a hard scale which gives them similar protection.

A further point is perhaps just worth making. In emphasizing that the general explanation is not the only one, have we done justice to Aristotle's concepts of form and matter, potentiality and act? In using these words, and perhaps feeling a little disconcerted by their glib ubiquity, we may forget their significance in Aristotle's view of nature because we are not ourselves accustomed to refer to its working in such terms. Primarily, *dynamis* stands for the principle of growth and change

¹ 438a15, in the Oxford translation. It follows immediately on the criticism of Democritus for identifying vision with reflection. As another example, 'Aristotle discusses at some length in the psychological and biological treatises such detailed questions as whether the bee can smell, the mole see and fish hear' (Lloyd, *Arist.*, 188).

Sensation

inherent in all living things and also called their *physis*. In calling it a potential, and regarding the process whereby, e.g., a seed becomes a flowering plant, as the progress of a potential being towards performance of its proper activity, Aristotle believed he had achieved a formula not only true but capable of the widest application. Thus the reception through the sense-organ of the form of the object in the act of sensation is in his view an occurrence exactly parallel to the flowering of a plant that was once a seed. It is the *physis* of both first to reach maturity and then to perform their proper activity (the two stages of *entelecheia* or *energeia*). Confronted with the statement 'The sense-organ has the potentiality of receiving the form, and in the act of sensation does so actually', we should not ask what it means any more than what it means to say that a seed is potentially a plant. The latter statement most of us¹ would accept without demur. We might ask for some account of how the plant grows, the answer being in terms of the roots sucking up nourishment from the soil and so forth, but the fact of growth, and Aristotle's formulation of it, we do not question because it seems natural. Yet to Aristotle it was equally natural when he was speaking of the act of sensation.

(e) Comparisons

This is, for more than one reason, not a comparative study, but I hope I may be pardoned for mentioning a few modern views which I happen to have noticed. Aristotle's explanation of sensation in terms of potency and act, and his conception of a sense-organ and its activity as 'the same thing [*sc.* a *syntheton*] but different in essence', does not correspond exactly to any modern theory, though representing a notable contribution to the still unresolved 'mind-body problem',² nearer to so-called 'interactionism' than to 'reductive materialism'.³

¹ For exceptions see pp. 198-200 above.

² A.'s dealings with this problem are 'perfunctory', says Hamlyn severely (*De an.*, xlii). 'It is the distinction between living and non-living that receives the main emphasis in his thought, not the traditional mind-body disjunction which has been developed since his day.' Does not his conception of soul as entelechy of body, and his striking and difficult discussion of the special position of *nous*, give great emphasis to the relation between mind and body?

³ A useful critical survey, by Paul Edwards, of these and other theories will be found in Edwards and Pap, *Modern Introduction to Philosophy*, 3rd ed., 172-83, from whose collection of passages I have frankly taken the quotations from Ducasse and Sinclair.

Psychology

C. J. Ducasse (d. 1969) wrote: 'Certain mental events are *doubtless* connected *in some way* with certain bodily events, but they are not those bodily events themselves. The relation is not identity';¹ and W. A. Sinclair (d. 1954) describes how when light-waves fall on the eye 'they cause changes in the retina, and this in turn causes changes in the nerves behind the eye, which in turn cause changes in the brain, after which, *in some way we do not understand*, we have the experience we call seeing.'² Unless we return (as many of course do) to pure materialism, it seems we can hardly do more than follow Aristotle in saying: 'The soul is of such a nature as to be capable of undergoing this experience.' N. R. Hanson, in his fascinating and thought-provoking *Patterns of Discovery*,³ takes a similar line: 'Seeing is an experience. A retinal reaction is only a physical state – a photochemical excitation. Physiologists have not always appreciated the differences between experiences and physical states. People, not their eyes, see. Cameras, and eyeballs, are blind.' 'What is it to see boxes, staircases, birds, antelopes, bears, goblets, X-ray tubes?' It is (at least) to have knowledge of a certain sort... It is to see that, were certain things done to objects before our eyes, other things would result... To see an X-ray tube is at least to see that, were it dropped on stone, it would smash.' So according to Hanson even the incidental sensibles of *De an.* 418a20–21 (p. 292 above) are still to be acknowledged as sensibles.

(6) THOUGHT

No psychologist has ever been able to answer satisfactorily the question where sense-perception ends and thinking commences.

J. I. Beare (1906)

PRELIMINARY NOTE ON 'NOUS'

As we have seen already (p. 286 with n. 5), Aristotle uses *nous* without scruple to mean either the infallible intellectual intuition spoken of in *An.*

¹ From a lecture given in 1947 (Edwards and Pap, revised ed. 1965, 253; omitted from 3rd ed. 1973). In this and the quotation from Sinclair, the italics are mine.

² From Sinclair's *Introduction to Philosophy* (1954; Edwards and Pap, 3rd ed., 648).

³ Cambridge 1958, pp. 6 and 20.

Thought

Post. or in a wider sense to include all the operations of reason.¹ In the *Politics* (1334b 17–20), the *psychē* is simply divided into two, irrational and rational, and *nous* is equated with the rational, and at line 24 with *logismos*. It can be practical as well as theoretical,² aiming at successful action, and as such is the equivalent of *φρόνησις*.³ It cannot be infallible in all these capacities,⁴ yet in its narrower meaning, illustrated in the *Analytics* and earlier in this volume (pp. 184, 192–4), it is always right. (So too in *De an.*, 433a26, πᾶς ὁρθός, and 428a17–18; but a little earlier, at 427b8–9, τὸ νοεῖν includes τὸ ὁρθῶς καὶ τὸ μὴ ὁρθῶς, because it is there used to include judgements of all sorts.) One can only try to make clear in each case, where the distinction is important, which sense is intended.⁵

(a) General

Aristotle has shown considerable hesitation in approaching the subject of the intellect. In the second book he writes (413b24): 'Concerning *nous* and the faculty of abstract reasoning nothing is as yet clear, but it would seem to be a different kind of soul, which alone can be separated as the eternal from the perishable.' A little later (415a11–12), after summarizing the ascending scale of faculties from the nutritive right up to argumentation and calculation, he shelves the subject with the words 'But theoretical *nous* is another story'. In book 3 chapters 4 and 5 he at last raises the whole question of the nature of thought. Before tackling these exceedingly difficult sections, it is important to recall that we have already in a previous chapter (pp. 181–4, 192–4) looked at the role of *nous* in Aristotle's epistemology, and its relation to inductive argument, all of which is highly relevant to the present theme.

Ch. 4 begins:⁶

¹ ὃ διανοεῖται καὶ ὑπολαμβάνει ἡ ψυχὴ, 429a23; equated with γνώμη, σύνεσις, φρόνησις as all εἰς ταῦτά τείνουσαι, *EN* 1143a25.

² νοῦς πρακτικός at 433a14, also called διάνοια πρακτικὴ at line 18.

³ At one place in the *Ethics* (1125a25) φρόνησις is called the opposite of νοῦς. This may offend the tidy-minded, but the context explains A.'s meaning, which is not inconsistent with anything he says elsewhere. As Burnet comments *ad loc.*, νοῦς is used 'in the special sense in which νοῦς ἐστὶ τῶν ἀρχῶν'. As another example of indifference to purely verbal consistency, one may contrast two statements on the relation of νοῦς to sensation, comparing 427b27, περὶ δὲ τοῦ νοῦν, ἐπὶ ἑτέρων τοῦ αἰσθάνεσθαι, with *EN* 1143b5, αἰσθάνειν, αὕτη δ' ἐστὶ νοῦς.

⁴ E.g. as ὃ υπολαμβάνει ἡ ψυχὴ, for ὑπόληψις is fallible (*EN* 1139b17–18).

⁵ For a more complete list of the different meanings of νοῦς see Brentano, *Psychology of A.*, 2–3. The main distinction between the wider and narrower senses is clearly put by Allan, *Phil. of A.*, 69.

⁶ To minimize the danger of straying from what he actually says and shirking difficulties

As for the part of the soul with which it knows and thinks¹ – whether it be separable, or not literally so but only in definition² – we must examine its distinctive character and consider how thought takes place. If thought resembles sensation, it must mean being acted on by the object of thought or some other similar process.³ It must therefore be impossible, but receptive of the form, having potentially the character of the intelligible without actually being its object, thought standing to its objects as sense to the sensibles.

Thus mind is at the outset linked with sensation, and this presents us with our first puzzle, in the apparently nonsensical sequence that if it is acted on by something (πάσχει) it must be incapable of being acted on (ἀπαθός). The word *apatheia* (freedom from change, decay or destruction by the agency of anything else) recurs shortly, and again after the division of *nous* into active and passive. For the moment we may keep in mind what was said earlier in the treatise (417b2–5), that the notion of being acted on (πάσχειν) is not simple but twofold: it may mean *either* the destruction of something by its contrary *or* its development and progress from potency to act by the agency of the actual. The latter we already know to represent the act of sensation, and so far thought is similar: '*Nous* is somehow potentially its objects, but not actually anything until it thinks' (429b20–31). Just as the sense-organ was capable of receiving the sensible form and making the soul aware of it, so the mind has the potentiality of receiving the intelligible form: that is, the essence. The process is one of assimilation. Mind 'becomes all things' (430a15), and only realizes its own actuality when it *is* one of them, i.e. is thinking of it, as writing is potentially on a tablet on which nothing has actually been written (429b31–30a2). 'Mind, like its objects, can be the object of thought, for in the case of what is without matter, thought and its object are the same: theoretical knowledge is

(though these may not always be soluble), I shall as far as possible translate and comment on his actual words.

¹ γινώσκει καὶ φρονεῖ, general terms with none of the special meanings attaching to ἐπιστάσις and νοεῖν. But at line 13 τὸ νοεῖν.

² Here A. simply acknowledges a problem which hitherto he has always postponed, namely whether the thinking faculty is something separate from the rest of the soul. At present we should be inclined to suppose that νόησις is only another function of the same πρῶτον, but the question is not finally faced until the next chapter.

³ ἡ τὶ τοιοῦτον ἔργον is important: 'a process different from but analogous to that', Smith in Oxford trans.

Thought

the same as what is known by it' (430a2-5: One is inevitably reminded of the self-thinking divine mind, pp. 261f. above).

But the analogy with sensation is not perfect.¹ Differences are occasioned by the fact that substance or essence, the object of thought, is intelligible form only, divorced from matter.²

429a29-b5. That there is a difference between the impassibility of the faculty of sensation and that of thought is evident from observation of sense and the sense-organs. When the sensum is too strong the sense cannot perceive, e.g. one cannot hear after very loud noises, nor see and smell after brilliant colour or a strong scent.³ But the mind, when it thinks of something specially intelligible, understands inferior things not less but more; for sense is impossible without the body, but mind is separate.

He has just said that it would be unreasonable for soul to be mixed with body, and so have some physical quality like heat or cold, and a physical organ, which it has not.

Reservation follows reservation. So long as mind is treated as a unity, as it is in ch. 4, its independence of the body cannot be absolute, for it is a part of the *psychē*, and body and soul form a single complex (*syntheton*). Hence although unmixed with body in the sense of not acting through a bodily organ, it is not unaffected by the body's decay. It is hard to extract consistent doctrine from a passage like 408b18-29 in book 1:

Nous seems to be implanted in us as a substance, and not to be destroyed. It would be destroyed above all by the wasting of old age, but what happens to it then is like what happens to the sense-organs.⁴ If an old man could get the right sort of eye, he would see like a youth. Thus senility results from an affection not of the soul but of the body that contains it, like drunkenness and disease. So too thought or contemplation decays through the destruction of some other part within, but is itself impassible . . . Mind is probably something more divine and impassible.

Here the impassibility of mind is explained by its *resemblance* to the senses, on the ground that in defective sight or hearing it is not the

¹ Hence $\eta \tau \iota \tau \omicron \iota \sigma \theta \iota \sigma \tau \omicron \nu \iota \tau \epsilon \rho \omicron \nu$ at 429a14-15 (p. 310 with n. 3 above).

² *Met.* 1032b14, $\lambda \acute{\epsilon} \gamma \omega \delta \epsilon \omicron \upsilon \sigma \tau \alpha \nu \acute{\alpha} \nu \epsilon \iota \upsilon \lambda \eta \varsigma \tau \omicron \tau \iota \eta \nu \epsilon \iota \nu \alpha \iota$.

³ Cf. *Insomn.* 459b20-22. In the case of touch, excess may destroy the whole animal (435b13-19).

⁴ $\acute{\alpha} \tau \iota \tau \omega \nu \alpha \iota \sigma \theta \eta \tau \eta \rho \acute{\iota} \omega \nu$. But surely he *must* have meant $\tau \eta \varsigma \alpha \iota \sigma \theta \eta \sigma \epsilon \omega \varsigma$ the seeing $\psi \upsilon \chi \eta$, not the eye. (For the converse substitution see p. 303 n. 1 above.)

soul that is impaired but only its physical agent; but we have just been reminded that the sense (*aisthēsis*, an activity of the soul) is affected by defects in its organs, and to say that intoxication has no effect on the *psychē* is surely, on Aristotle's own principles, extraordinary.

The object of thought ('the intelligible' or 'intelligible form', 429a14-16) appears here as something given. That is to say, it is assumed that thought is concerned with universal, definable concepts. These concepts, as was explained in *An. Post.* 2, are acquired in the first place from sensation, by means of the generalizing faculty possessed by man alone. In *De anima* we learn of the intermediate step of *phantasia*.¹

Ch. 7, 432a2. Intellect is the form of forms, sensation the form of sensibles. And since it is believed that nothing besides perceptible extended bodies exists independently, the intelligible forms are contained in the sensible, both abstractions and the various states and affections of the perceptible objects.² For this reason, without sense-impressions no one could learn or understand anything, and in scientific thinking one must with one's thoughts contemplate images (*phantasmata*). These resemble things perceived, but are without matter . . . How will the earliest thoughts differ from images? Say rather that not even they are images, but they cannot occur without them.³

Phantasia may be linked with either reason or sensation, only the latter kind being available to animals other than man.⁴ This is expanded in ch. 11.

Ch. 11, 434a5. Sensitive imagination, as I have said, is found in the other animals, but the deliberate kind only in those with reason, for a decision between two courses of action is the work of reasoning. One must measure by a single standard, since what is sought is the superior; so reason is capable of making a unity out of a number of images.

A practical difference between sensation and thought is brought out in book 2, 417b19-25:

¹ On *phantasia* see pp. 287-8 above.

² Ross (*ad loc.*) found the intended distinction 'not very clear', and suggested moral concepts as examples of τὰ ἐν αἰσθητοῖς λεγόμενα; but they are primarily the objects of mathematics. Cf. 403b15, *Caet.* 299a16, *Met.* 1061a28-29.

³ So earlier (431a16-17): 'The soul never thinks without images.'

⁴ 433b29-30; cf. 433a11-12, 'In the other animals there is neither thought nor calculation, but only φαντασία', which in them remains indeterminate or undefined (ἀόριστος ἔστιν, 434a5): to define calls for νοῦς.

Thought

They differ in that with sensation what causes the activity comes from outside, in what is seen or heard or otherwise perceived. This is because sensation in act is of individuals, whereas knowledge is of universals, and universals are so to speak in the soul itself. Hence a man has the power to think whenever he wishes, but not to perceive: the object of perception must be present.

Reason then, as we learned from the *Analytics*, resides in the faculty, peculiar to man, of generalizing from perceived individuals, seeing the common form of man in Callias, Socrates and the rest.¹ But to do this demands comparison, which in turn depends on memory, retention in the mind of a number of sense-impressions together through *phantasia*, which thus becomes the foundation in their respective spheres of practical deliberation and theoretical knowledge. How human thought, though rooted in sensation and the retention of its images, goes beyond them, is illustrated by a striking example, which may be reconstructed from Aristotle's notes thus (431b5-8). A commander by the faculty of sight is made aware of torches (say on the opposite hillside), and by the 'common sense' perceives that they are moving. He recognizes that they must indicate the presence of the enemy, goes into his tent where he can be undisturbed, and retaining their images in his mind's eye, 'calculates and plans the future with reference to the present'.²

A few more notes before we leave ch. 4.

429a18-21. *Nous* therefore, since it understands all things, must be unmixed, as Anaxagoras says, in order to dominate, that is, to know.³

In his own treatment of *nous* Aristotle was haunted by the ghost of Anaxagoras, who had appeared among the Presocratics 'like a sober man among babblers' with his assertion, adopted by both Plato and

¹ P. 183 above. Cf. *EN* 1147b4-5: 'The beasts have not the universal concept, only images and memory of individuals.'

² In Düring's reconstruction the *φωκτόν* (admittedly singular) is a torch waved by his own look-out to signal the enemy's approach. I think γνωρίζει ότι πολέμος and the next clause suggest rather the above story, but A.'s notes are incomplete and the point of the example is unaffected.

³ The words *ἀνιψής* and *ἀπαθής* are both taken from Anaxagoras (*Phys.* 256b25), who was speaking of the cosmic Mind, the ruling power that 'set all things in order'. It may be that, as Hicks suggested, A.'s is a somewhat forced interpretation due to his preoccupation with the human mind. See fr. 12, vol. II, 273 with n. 2.

Aristotle himself, that *nous* was ultimately responsible for the orderly arrangement of the universe. He had disappointed by his failure to exploit the great discovery,¹ which nevertheless Aristotle recognized as seminal, and it continued to exercise an influence which he could not shake off. From Anaxagoras, on his own admission, he borrowed the epithet 'impassible' as well as 'unmixed', which may account for the difficulties and ambiguities in his own use of it, critical though he is of his predecessor: 'He says that *nous* is impassible (*apathēs*) and has nothing in common with the rest. But how and from what cause, being such, it will know, he has not said, nor is it clear from what he does say.'² In 3.4 (429b22-25) Aristotle repeats this difficulty as his own, and solves it by the doctrine of potency and act.

At 429a18 Aristotle agrees with Anaxagoras that *nous* must be 'unmixed', and it is a perennial controversy whether this means unmixed with its objects, the intelligible forms (Alexander, Themistius, Hicks, Nuyens), or unmixed with body (Philoponus, Averroes, Aquinas). The former view seems preferable, not for the rather weak reasons given by Hicks, but simply because the remark will then connect in sense with the next one: 'for by obtruding its own form it would hinder and obstruct what is different from it;³ hence it has no other nature than this, that it is a capacity.'

Lines 27-29. Those are indeed right who call the soul the place of forms (τόπος εἰδῶν), except that it is not the whole soul but the thinking soul, and that the forms are there potentially not actually.

The view which Aristotle here approves with his own modification cannot well be anyone's but Plato's. The phrase does not occur in the dialogues, but in the *Parmenides*, as Hicks noted, the Forms are said to be 'in souls' and 'in us'. It may represent a view of the older Plato when the unsatisfactoriness of completely transcendent forms was beginning to make itself felt; or he may have thought it compatible with hypostatization. To go further would be an interesting speculation but no more.

¹ *Met.* 984b15, 985a18; vol. II, 275.

² 405b19-23. Obscurity was a failing of Anaxagoras: ἥτιον διασπαρῆς 404b1.

³ 429a20-21. I take τὸ ἀλλότριον to be the object of the verbs. So Hicks, following the ancient commentators, for whom see Rodier's note. 'Plainly subject' says Ross. For the significance of the sentence see p. 317 below.

Thought

(b) *The Creative (or Active) Reason*¹

The subject of *nous*, when and how and from what source it is acquired by those who share this principle, raises a most baffling problem, which we must endeavour to solve so far as our powers allow and so far as it is soluble.

Aristotle, *GA* 736b 5-8

No scholar can approach without extreme diffidence the subject of the Active, or Creative, Reason, 'perhaps the most obscure and certainly the most discussed of Aristotle's doctrines' (Ross). In 1911 H. Kurfess wrote a dissertation simply on the history of its exegesis, and in 1936 M. Grabmann another on its interpretation and modification in medieval times alone. G. Kafka in 1922 wrote of the importance which the doctrine has assumed in the exegesis of Aristotle's psychology, 'although', as he justly added, 'the whole differentiation between the two kinds of *nous* is confined to a casual jotting, the explanation of which, owing to the obscurity of its presuppositions, has of necessity furnished a Danaid-task for the commentators'. Since, however, in spite of these warnings, I shall be rash enough to follow a train of thought different in some respects from most if not all others, I shall not attempt a full appraisal of rival views from Alexander of Aphrodisias to the twentieth century. They are not difficult to find.²

The distinction within *nous* is not mentioned elsewhere. The chapter consists of brief notes, obviously intended for expansion, and an attempt to expand them and determine their significance must take into account what we know of Aristotle's system as a whole.

Ch. 4 showed that Aristotle's enquiry into the mind was directed to

¹ Often spoken of as *νοῦς ποιητικός*. One must, I suppose, point out once again that this actual phrase does not occur in A. But since the other *νοῦς* is called *παθητικός* (430a14) and is what it is *τῷ πάντα γίνεσθαι*, and this one *τῷ πάντα ποιεῖν* (430a14-15), the coinage is appropriate and harmless. In view of this last phrase, however, it seems more appropriate to call it 'creative' rather than 'active', though of course it is that too (430a18).

² Ross in his *Aristotle* (153 n. 1) mentions some places where they may be found. He himself quotes and discusses the ancient commentators in his *De anima* (pp. 40-4). Brentano's book on A.'s psychology, available in English since 1976, is avowedly designed to lead up to the problem of the active reason, and he himself surveys earlier interpretations on pp. 4-24. See also Nuyens, *Psychologie*, 296-312, and O. Hamelin's small book, *La théorie de l'intellect d'après A. et ses commentateurs*. For those to whom it is available an excellent summary, rich in references, is T. Ando's in his *A.'s Theory of Practical Cognition*, 20-31.

answering a particular question: How does mind differ from the rest of the *psychē*? Is it an actually separate entity, or like the rest of the soul just a mode of activity of the whole living creature and so inseparable from the body except in definition? The question is crucial, especially for a pupil of Plato, for it amounts to asking: Is immortality possible or not? Here then he finally faces the question which he has already thrown up and deferred in this treatise and elsewhere. In general, soul, being the form or actuality of the body, cannot exist apart from it; but he has allowed in several places that there might be something in the soul, not just one of its functions but something separate, which could so exist. He has left a loophole for immortality but postponed any proper consideration of it. In his early, Platonic days, he had said outright that *nous* alone, of all our faculties, was divine and immortal (*Protr.* fr. 10 Düring, 10c Ross). Then at *GA* 736b 27-29 (and cf. a9-10) we read 'The remaining possibility is that *nous* alone comes from outside and is alone divine, for no bodily activity shares its activity.' An amusing note in the *Metaphysics* (1070a 24-26) is similar - amusing as illustrative of Aristotle's way of piling notes on notes, tumbling over himself to ensure that nothing even remotely connected with his present topic be forgotten. Its turn will come, if he makes a memorandum now. His point there is nothing psychological, but simply to show that the form of anything comes into being simultaneously with the whole - the shape of a bronze ball together with the ball itself, health when there is a healthy man and so on - and he adds breathlessly: 'Whether anything remains afterwards' must be looked into. In some cases nothing prevents it, e.g. if the soul is such-and-such - not all soul but *nous* - all of it perhaps impossible.' Earlier in *De anima* itself the possibility has been hinted at: '*Nous* is perhaps something more divine and is impassible'.²

Now that he can evade the problem no longer, he applies his own well-tried principles and concludes that *nous* itself, like everything else, must have an active as well as a passive, an actual as well as a potential constituent and that the one is separate³ from, and independent of, the

² Sc. when the man has lost his health and the ball been melted down.

³ 408b 29. 413b 24-27 has already been quoted (p. 309), and cf. 403a 10-11, 408b 18-19.

³ Or separable (χωριστός; on the ambiguity of such words see p. 219 n. 5 above); but I shall be arguing for the stronger term.

rest of soul and *a fortiori* from the body, while the other is not. The arguments of the previous chapter, developed as they were on the assumption that *nous* is an indivisible unity, have, after all, led to a curious conclusion which to Aristotle himself must have seemed highly unsatisfactory. *Nous*, he insists, is the highest of all faculties of the soul, and several of the characteristics with which the argument has endowed it sound consistent with this: e.g. it is incorporeal, does not mingle with body (429a24-25). The epithets 'unmixed' and 'impassible' suggest at first sight similar ideas of superiority, the kind of epithets applied to the supreme mind of God.¹ It soon appeared, however, that in this case the argument leads to something very different. Mind is unmixed not only with body (though that also is true) but with any *form* whatsoever, in order that, having no character of its own, it can take on the forms without distortion in the act of thinking. Mind therefore, like the rest of soul, is of itself pure potentiality, as he says several times. 'Mind is potentially its objects, but actually it is nothing until it thinks' (429b30-31);² and the human mind cannot think continuously.³ But potentiality and matter are the same thing, as he has said before (412a9) and repeats at the outset of this very chapter, making it the premise of his whole argument for a dual conception of mind.⁴ Mind must therefore, on the premise that it is a unity, be pure matter, in the Aristotelian sense of substratum (not of course in our sense of body). The language of 429a20-21, translated on p. 314 above, suggests more than anything what Plato said of his 'receptacle of becoming' (which Aristotle equated with his own conception of matter),⁵ namely that if it were not formless, but resembled any of the form-copies that enter it, it would represent them badly, 'obtruding its own nature'.⁶ But in Aristotle's scale both of being and of value matter comes at the bottom, form and actuality are at the

¹ The First Unmoved Mover is called ἀπαθής at *Met.* 1073a11.

² Also 429a21-2 δὲτε μήδ' αὐτοῦ εἶναι φύσιν μετέμειναι ἀλλ' ἢ ταύτην, ὅτι δυνατός.

³ An obvious fact which A. did not ignore. At *Met.* 1072b14-16 and 24-25 the continuity of divine activity, which is νοήσις, is contrasted with the brief spells of thought that are possible for us. At *EN* 1153a20 he remarks that even abstract cogitation can injure one's health.

⁴ Cf. *Met.* 1078a30-31, where ὁλικῶς replaces δυνατόν as the opposite of ἐντελεχείῃς.

⁵ *Phys.* 209b11-12, on which see vol. v, 266 n. 3.

⁶ *Tim.* 50 e. Note the verbal echo in παρήμενον (*Tim.*) - παρήμενον (De an. 429a20). I say this with due respect to Moreau (*A. et son école*, 184f.). He may have been thinking of ὅλη as σῶμα.

top. Ch. 4 then would appear to teach that mind is unmixed with body (a compound of matter and form) not because it is superior to it but because it is inferior. This anomaly among others he now seeks to be rid of by proposing that the analysis into form and matter may be carried out within the nature of *nous* itself.

The existence of this higher *nous*, then, is based on a purely deductive argument from the principles of potentiality and act. It is introduced by a comparison with the world of physical change, and this must be borne in mind throughout any discussion. The chapter begins thus (430a10):

Just as in the whole physical world there is, in each class, on the one hand matter (i.e. what is potentially all those things) and on the other something else which is efficient cause, in that it makes them all (e.g. a craft in relation to its material), so in the sphere of soul also there must exist this distinction. One *nous* is such as to become all things, the other such as to make them all,¹ a kind of positive state, like light; for in a sort of way light makes potential colours actual colours.

First then he repeats the universal law, familiar from the *Physics* and *Metaphysics* and already affirmed in *De anima*, that any act of change demands both a matter with the potentiality of changing and an external agent to cause the change, that is, to rouse the latent potentiality into motion. The agent must possess in actuality the form which the subject of change is in process of attaining.² Man begets man, and in artificial production the form must pre-exist in the mind of the artificer. Aristotle mentions the crafts here as a reminder. If then it is with the soul as with the whole natural world, what is the 'other', the agent which will set its potentialities in motion? For physical change there is in natural becoming the parent animal or plant, in artificial the craftsman's design; and in sensation there is the external object. Thought, however, is different:

417b19-23. Thought and sensation differ because in the one case the agent which produces the actuality is outside, namely what is seen or heard,

¹ Sc. all intelligible forms, the objects of thought; i.e. it makes them intelligible, and offers them, as it were, to the passive *nous*.

² See pp. 119, 125, 252 above, and *De an.* 417a17-18: 'Everything that undergoes change and movement does so through the agency of an efficient cause already in act.'

Thought

and similarly with the other senses. The reason for this is that actual sensation is of the individual, whereas knowledge is of universals, and these are in a sense within the *psychē* itself.

So far it looks as if thought is exceptional in being an activity of the *psychē* which needs no external stimulus; but it must not be forgotten that in nature, besides and above the separate agents for individual products, there must be, as common First Cause of all, a supreme and perfect Being. No progress from potentiality to actuality will take place unless there exists an ultimate as well as an immediate *telos*. Whether or not that is relevant here, Aristotle is not going to tolerate what would be a blatant infringement of his first law of motion: nothing, not even the soul, can strictly move, or in any way act on, itself. Human intellectual activity too demands an external efficient cause, for it results from the arousing of a potentiality to actuality. For thinking to take place, therefore, he feels bound to posit two factors: (1) a faculty (*dynamis*) of taking on the intelligible form of an object, the *nous* which in the act of thought 'becomes all things',¹ and (2) something which, itself an act, can call this latent capacity into motion so that it contemplates – and so becomes – the form itself.

Hoping to elucidate the function of this creative reason, Aristotle draws an analogy with the part played by light in the act of sight. The analogy is not complete,² for light is not that which itself possesses the form which the colours are in process of attaining. But light is a third factor that must be present besides the capacity (sight) and the seen object, if the act of vision is to take place. So far the active reason is analogous, and also in that both are actualities over against potentialities.³

The passage now becomes still more sketchy and disjointed.

¹ τῷ πάντα γίνεσθαι is further explained by ch. 4, 429b4–9.

² As A. is aware hence τῶτον τι at line 16. It is difficult to resist the impression that much in these chapters consists of thoughts jotted down as they struck him, about which he might well have said ὅτερον ἐπισκεπτόν.

³ The word εἶς is applied here to both active reason and light. This, it has been objected, is not strictly accurate, because both are strictly speaking activities and are so described. The objection is captious. Even if A. cared more about terminological precision than he did, the formed state and the activity that results from it are both properly termed *ἐνέργεια* as well as *ἐντελέχεια* in joint opposition to *δύναμις*. See the comments of Bonitz, with examples, in his *Index*, 253b46ff. Light itself is a εἶς at 418b19, *ἐντελέχεια* at 419a11, and *ἐνέργεια* at 418b9.

Psychology

(Lines 17-19) This *nous* is separate, impassible and unmixed, being in its essence activity;¹ for the active is always of more worth than the passive, the cause than the matter.

From this we learn that the honourable epithets hitherto applied to *nous* as such belong only to the active principle of *nous*, and that the passive *nous* really is the matter which *nous* as a whole appeared to be. It was high time for it to be divided.²

(Lines 19-21) Knowledge in act is identical with its object: potential knowledge is prior in time in the individual, but speaking generally, not even prior in time.³

Sensation takes on the sensible form of an object without its matter. The object of thought (intelligible form) has no matter, therefore thought's identity with its object is complete. Exactly the same was said of the divine thought in the *Metaphysics*. (See pp. 261f. above.) That the actual must precede the potential ('man begets man'), though the individual progresses from potentiality to act, is by now a very familiar principle. Here Aristotle points out that this must be true of *nous* as of the rest of nature, which can only mean⁴ that the active reason exists before any human thinking takes place.

(Line 22) It is not at one time thinking and at another not thinking.

Its activity is uninterrupted. This follows from its being 'in its own essence activity', just as in the description of God in the *Metaphysics*. There, for his activity to be eternal, his essence had to be act; here the function of the creative reason as continually operative motive cause or *archē* necessitates its essential and eternal activity. So far at least, it appears that any description applicable to Aristotle's god applies also

¹ τῇ οὐσίᾳ ὡς ἐνέργεια. The wording, with ἐνέργεια in the nominative, offers a striking parallel to the description of the First Unmoved Mover in *Met.*: ἀρχὴν τοιαύτην ἥς ἡ οὐσία ἐνέργεια (1071 b20, p. 253 above).

² Undivided, it could cause two excellent scholars to contradict each other flatly. Contrast Stocks (*Aristotelianism*, 80): 'That reason which is man's special gift has no bodily organ; its activity has no connexion with any bodily part' with Düring (*Arist.*, 552): 'The intellect (*nous*) is indeed something divine, but its activity too is tied to an organ, namely the heart.' Here both scholars speak of *nous simpliciter*, as if it had no internal distinctions.

³ There is no reason to reject this sentence as do Ross and Hamlyn. It is repeated at 431 a1-3, but as Brentano said (*Psychology of A.*, 117), 'it is perfectly appropriate in both places'. We are not dealing with a work tidied up for publication.

⁴ Though the statement is sure to be challenged.

Thought

to the creative reason. We already know that it is pure actuality, and he goes on (lines 22-23):

When separate it is just what it is, and this alone is immortal and eternal.

This recalls Plato's comparison of the soul to the sea-god Glaucus,¹ whose original form can hardly be seen, so broken and crushed is it by the waves and so covered with stones, seaweed and barnacles. That, says Plato, is how we see the soul, reduced to a similar plight by its association with the body. To see its true nature (τὴν ἀληθεῖ φύσιν) we should have regard only to its love of wisdom (*philosophia*), which shows it to be akin to the immortal and divine.

(Lines 23-25) But we do not remember, because this is impassible, and the passive *nous* is perishable.

On the least unsatisfactory interpretation this is a note explaining why Platonic *anamnesis* is impossible on Aristotle's theory.² The part of us which can receive and retain impressions³ perishes at death. The only part (if it is a part of us) which is immortal is this pure form (actuality), and this, as he has explained, must be impassible in the full sense. Hence we cannot think of memories being carried over from our present state of existence in the body into another. The ambiguity of *apathes* in ch. 4 is another difficulty resolved by the partition of *nous*.

(Line 25) 'And without the creative reason nothing thinks' or 'the passive reason thinks nothing'.

No noun appears in the Greek, only a pronoun ('without this'), and, enigmatic to the last, the chapter ends with a sentence which as it stands could be translated in any of four ways. Besides the two given here (which involve no difference of doctrine), the words could mean 'without the passive reason nothing thinks' or 'without the passive reason the active reason thinks nothing'; and so indeed some have

¹ *Rep.* 611 c-12 a. I do not mean that A. necessarily had this passage in mind, but only that his thoughts were running on Platonic lines.

² For *anamnesis* see vol. iv, 247. Hamlyn follows Hicks in supposing that the sentence refers to ordinary forgetfulness.

³ A form of *παθεῖν*, even if not in the full sense in which it applies to sense-organs and the senses.

translated them.¹ If they are right, we shall have to give up all hope of understanding not only Aristotle's explanation of thought but his whole philosophy. It would be impossible and absurd, a negation of his most cherished principles, for him to say that what is 'in its essence activity' could not exercise that activity without what is potential, making act subordinate to, and dependent on, potentiality.

So ends the chapter. Its consequences for a belief in human immortality are serious. Only this pure essence is immortal, and it is entirely impassible. It is the motive cause of our being able to reason about the world experienced through the complex unity of body and soul which constitutes our nature in this life, but it is not affected by any of these impressions. We cannot therefore retain in a future existence any impressions from this life, and if any sort of immortality is possible (which is unlikely), it has become quite uninteresting.

This leaves the final question, the most difficult of all. Is the creative reason an internal part of the human *psychē* or is it external to it, and if external, is it identical with the supreme self-contemplating *Nous* of *Met. A*, the divine First Cause of all? Each alternative has had its champions from antiquity through the Middle Ages to later times, but at the present day the idea that Aristotle has the divine *Nous* in mind is almost universally rejected.²

The brevity of these notes makes it extremely difficult to know how they were to be expanded. It might be natural to suppose that as all the other functions of soul exist separately in each of us – each has his own soul – so we each have our own self-contained reason, in both its passive and active aspects. In this case, however, there is not the same

¹ E.g. Barbotin in the Budé translation ('et que sans lui (l'intellect passiv) il n'y a pas de pensée') and Cassirer, *A.'s Schrift 'Von der Seele'*, 178 ('dass die tätige Vernunft ohne die leidende nichts denke'). But he believed that the active reason, though the cause of all human thought, is not itself a thinking being ('nicht aber selbst ein Denkendes'). (A *vous* 'that never voti?') On this interpretation one would print only a comma before *καὶ* and take the sentence as completing the explanation of *οὐ μνημονεύειν ἔσθαι*.

² I nearly omitted 'almost', but welcome Elizabeth Anscombe's opinion that this is at least the more likely interpretation. She writes (*Three Phils.*, 58): 'Aquinas took the "productive" intellect to be a concept-forming part or aspect of the human mind; but from Aristotle's brief and obscure text it seems to me more likely to be the divine mind that Aristotle intends, unless, which is possible, he thought that human minds actually had a divine part: the one thing that comes into the world, as he puts it, "from outside".' (My italics.) S. R. L. Clark (*A.'s Man*, ch. v. 3) also identifies the creative *nous* (which by a somewhat misleading transliteration he calls 'poetic') with God, but I have certainly followed a different train of thought from his.

necessity. Our souls are no more than the entelechy of our composite selves, but this restriction does not apply to the creative reason, which is separate (or at least separable), immortal and eternal. Indeed as a pure, separately existing activity it is not on Aristotle's principles easily distinguishable from the prime intellectual mover of all.¹ Similar indications that have emerged are the identity of reason with its object (so of God at *Met.* 1072b21); the temporal priority of act to potency; and the uninterrupted continuity of its activity, which of course follows inevitably from the fact that, as with God, act is its essence.²

But the strongest evidence that Aristotle had the First Cause in mind is the close parallel which he invites us to draw between the whole world of nature and the soul, the physical and the psychological realm.³ The reader must forgive a little repetition here, since the point has hitherto been either ignored or misconstrued. Each species can only realize its own specific form, and each member of a species has its own external cause, a developed member of the same species, which has brought about its individual development from potency to act. But the Prime Mover remains a necessary part of the scheme, because without a first principle displaying perfect and eternal activity, these temporary and imperfect attempts (all creatures realized in matter are necessarily imperfect) would not have taken place. (Cf. p. 258 above.) The formal-final-efficient cause⁴ is twofold.

Phys. 198a35-b5. The sources of physical change are twofold, one of which is not itself physical. Such is anything that moves without being moved, like the wholly unmoved first of all beings and the essence or form, for that is its end and what it is for. Therefore since nature fulfils a purpose, we must know this cause too.

¹ A plurality of active intellects, one for each of us, could hardly be defended by the arguments which Merlan used of the 55 subordinate unmoved movers (pp. 271-5 above), for they do not exhibit the same serial relation of prior and posterior. The defence attempted by Brentano (*Psychology of A.*, 230-2) does not seem to me successful.

² Even for us pure thought is συνεχεύεται. We can spend longer periods engaged in it than in other forms of activity (*EN* 1177a21-22), but they are brief compared to the unbroken intellectual activity of God (*Met.* 1072b14-15). For the parallels in the *Metaphysics* see p. 260 above.

³ ἐπεὶ δ' ὥσπερ ἐν ἀνάσσει τῇ φύσει... ἀνάγκη καὶ ἐν τῇ ψυχῇ (430a10 and 13). Some cut out the ὥσπερ of the mss., which if retained makes the complex sentence into an anacoluthon. The point is unaffected.

⁴ For the factual union of these three aspects of causation see *Phys.* 198a24-27, pp. 225-6 above.

Psychology

So too in the *Metaphysics* (1070b34-35), after a disquisition on the four causes in the natural world, he adds: 'And besides these there is that which as first of all things moves them all'. The First Cause is common to all, though at the same time the cause of development *within the individuals* of each species. So in *De anima*, on the interpretation offered here, Aristotle is saying that 'just as in all nature, so in the soul', the First Cause calls latent human thoughts into activity.

In spite of its daunting compression, this chapter is clearly the climax and culmination of Aristotle's account of psychical activities, as *Met. A* ch. 6 was of motions and changes in the physical world. There he explained why the ultimate cause of physical change must be God; now he has shown why the ultimate cause of changes in the soul (his description of the processes of sensation and thought) must also be God. So in this realm too he has demonstrated what needed to be demonstrated, since it was clearly his aim to unify the whole world-system by making God, the First Unmoved Mover and (let us not forget) supreme *Nous*, the ultimate cause of all change whatsoever.

Extant comment starts with Aristotle's companion Theophrastus, but is not always perfectly clear. He himself wrote: 'that whereas desires and other passions are physical motions and have their origin in the body, 'judgements and acts of pure thought cannot be referred to anything else, but their origin, activity and end are in the soul itself, even if *nous* is superior and more divine, as coming from without and altogether perfect'. It was Alexander of Aphrodisias, at the end of the second century A.D., who maintained expressly that Aristotle's creative reason was not a part of the human soul but the divine *Nous* itself, which 'came to us from without'.¹ To this Themistius objected in the next century (*De an.* 189f. Heinze): 'Aristotle says that this kind of *nous* is in the soul, as it were the most valuable part of the human

¹ *Ap. Simplic. Phys.* 964-5 Diels. This and other relevant fr. of Theophrastus may be conveniently found in Hicks, *De an.*, appendix pp. 589ff. Note also E. Barbottin, *La théorie aristotélicienne de l'intellect d'après Théophraste*. The fr. read as if Theophrastus, though A.'s colleague had in this matter no more to go on than our chapter.

² See Hamelin, *Théorie de l'intellect*, 31-7, and most recently Moraux in *Symp. Ar.* vii, 284. The word *νόσος* is taken from A. himself, who used it at *GA* 736b27-28 to make the point that men possess *nous* as something divine, which 'enters from outside' (p. 316 above). The passage in Alex. is most conveniently found in Brentano, *Psychology*, English ed. 183 (translated); the Greek text in the German original, p. 7 n. 12.

soul.' He thus becomes the first of a long line of commentators, especially strongly represented today, who insert the word 'human' into Aristotle's sentence. St Thomas followed him in this objection, as has modern scholarship. So Ross: 'The active reason is distinctly presented there as existing in the human soul.' Allan even adds italics: mind is the most valuable 'of those faculties which are present in the *human* soul; he says that an active and a potential mind must be distinguished "in the soul"'.¹

I suggest then (though perhaps in a minority of one) that in the light of Aristotle's argument this is an unusual way to take the words. 'Just as (or "since") in the natural world . . . so it must be in soul.' The ultimate moving cause 'in nature' is the First Unmoved Mover, though it is not in physical things, nor would anyone try to press that meaning on Aristotle's Greek. It is outside them, but the cause of motion in them (ἐν τῇ φύσει). Similarly the motive cause in things psychical (ἐν τῇ ψυχῇ), activating the thoughts of men, is something transcendent, a *nous* eternally active on its own. All physical change depends on the existence of a perfect Being, which nature emulates as far as it can: 'it moves as object of desire'. Must not change in the *psychē* be in the last resort similarly activated? The only alternative seems to be that each of us has his own unmoved mover, and this cannot be accepted.²

The words 'in the soul' have been the classic stumbling-block in the way of believing that the creative reason is God. Another difficulty has been seen in the words at 430a22-23 which mean literally 'when it has been separated it is just what it is', i.e. only in separation does it display its own true nature. The use of the aorist participle (χωρισθεῖς) it is urged, implies a time when it was *not* separated, so the ambiguous adjective in line 17 (χωριστός) must mean 'separable' rather than 'separate'.³ At the risk of seeming to take the easy way out, I would

¹ Ross, *Metaph.* 1, cxlviii (cf. his *De an.*, 45), Allan *Phil. of A.*, 82. They were preceded by Trendelenburg, *De an.*, 404, agreeing with Themistius: 'quae verba aperte de humano agere animo', Brentano, *Psychology of A.*, Eng. ed., 110 ('He says that the *nous poietikos* belongs to the human soul'), 117f., and others. The most vigorous and persuasive opponent of the view upheld here is de Corte in his *Doctrine de l'intelligence chez A.*

² The creative reason being pure *ἐνύπνια* must be unmoved, for motion is *incomplete ἐνύπνια* (*Phys.* 201b21-32 etc.). Nor can the unmoved intelligences of the stars be accepted as a parallel, for the reason given on p. 323 n. 1 above.

³ Ross, *Metaph.* 1, cxliii n. 2, Brentano, *Psychology of A.*, 139, and Rist's article in *CP* 1966

remind readers not only of the many occasions (and they could be multiplied) on which we have detected Aristotle using language imprecisely, but also the cumulative evidence here presented that this 'immortal and eternal substance' cannot be an integral part of the perishable human soul. If the temporal associations of the participle do constitute a difficulty in the identification of the creative *nous* with the divine *Nous*, it is at least beginning to appear that the difficulties in supposing it internal to the human soul are both more numerous and more serious.

This is not to deny that for Aristotle mankind occupied a very special place in the universe. 'Nature created everything for man, plants for the sake of animals and the other animals for the sake of man' (*Pol.* 1256b21-22, 15-20). It is also true that the word 'divine' or 'godlike' (*theion*) applies in a special sense to man on account of his possession of *nous*.¹ Through this he, alone of sublunary creatures, shares, if only intermittently and to an inferior degree, in the perfect and eternal activity of God.² This unique human prerogative it will be better to consider in the context of ethics, which is for Aristotle the enquiry into the best form of human life and how to achieve it. To sum up, then, in *De anima* 3 at least, the human soul is superior to those of plants and animals in that besides all the other psychic faculties

(p. 328 n. 1 below). Yet Brentano also wrote (*o.c.* 117): 'Thus the expression "separable" does indeed assert more than a mere separability from corporeal matter; it indicates actual separation from it.' At 429b5 χωριστός must mean separate, and a strong piece of evidence is *EN* 1178a20-21: the other virtues, and the happiness they bring, belong to man as a σύνθετον, ἢ δὲ τοῦ νοῦ χωρισμένον.

¹ We have already seen *nous* as something θεῖον that 'enters from outside' at birth (p. 316 above); 'divine' also a little later in *GA*, at 737a10. I say 'in a special sense' because no weight can be attached to the epithet θεῖον itself. Not only do bees have τι θεῖον in contrast to hornets and wasps (*GA* 761a5), but in the *Ethics* (1153b32) A. declares in Wordsworthian mood, 'All things have by nature something divine'. θεῖον is used in comparative and superlative, e.g. it is 'more divine' for a city than for an individual to attain the human good (*EN* 1094b9-10). The δύναμις of all ψυχή is associated with (κακονωυμένην, *GA* 736b30) a body more divine than the four sublunary elements. This is the vital heat or spirit, a substance 'analogous to' the elements of the stars, i.e. *aither*. It is not fire: 'fire generates no living creature' (736b29-37a1). The higher animals have more heat than others (*De resp.* 477a16). The statement above, on which this is a comment, relies rather on a text like *PA* 656a7-8: 'The human race is either the only known kind of animal to partake of the divine, or shares it more fully than any others.' What is said here should be read with the comments on *EN* 10 on pp. 392ff. below.

² *Met.* 1072b14-18, 24-26. The whole passage is translated on pp. 260ff. above. As a curious footnote to this, A. in a biological work gives as the reason why man, alone of the animals, stands upright the demands of his nature as a thinking and divine being (*PA* 686a25-31).

Thought

it possesses the faculty (potentiality, *dynamis*) of thinking, the basis of which is the recognition and manipulation of universals. As the senses are called into activity by the external object perceived, so our *nous*, whose objects are within it, is directly activated by the supreme, supracosmic *nous*, or God. This will be accomplished, though Aristotle does not say so in our extant text (which is hardly surprising), through the aspiration of all potentiality to actuality and its consequent response to the supreme Being. The sum of things, including the psychical as well as the physical realm, is not disjointed like a bad tragedy. 'One alone is king.'¹

APPENDIX

Comment on a few modern opinions

Ross put forward a curious half-way solution, that on the one hand the words 'in the soul' (and *χωρισθεις*) preclude an identification of the creative reason with God, but nevertheless 'It is clearly implied that active reason, though it is in the soul, goes beyond the individual; we may fairly suppose Aristotle to mean that it is identical in all individuals.'²

In general scholars are curiously reluctant to admit the conclusion to which their thoughts seem to be leading them. Hamlyn, for example, in his notes on the chapter writes³ that the active reason 'must be entirely actual, and thus absolutely distinct from anything material (which could provide potentiality). In this respect its status in the soul is *like that of the Prime Mover* in the universe at large.' On the next page: 'Hence too, *like God*, it can have separate existence and is eternal, just because of its lack of potentiality'; and again:

The part of the soul which is said to be eternal is a rather abstract entity which has only a metaphysical role to play as a necessary condition of the

¹ A small additional point in favour of the identity of the creative reason with God is the statement at 430a23-25 that we do not carry memories over to another life because the passive reason perishes and the active reason is *αθάνατος*. This accords with the Prime Mover's superiority to knowledge of anything but himself (pp. 260f., 261 n. 2).

I have not appealed to *EE* 1248a24-29, which has been thought to support the view that the creative reason is God (Brentano, *Psychology of A.*, 153, Hamelin, *Théorie de l'Intellect*, 30f.), because I am not sure what it implies, and in particular I do not know what the words *καὶ πᾶσι θελοῖσι* mean, nor how they should be emended if corrupt.

² Long before Ross, Trendelenburg, in spite of being also a follower of Themistius, exclaimed: 'Num intellectus agens unius est humanae mentis? Credi non potest.' (*De an.*, 1877 ed., 404.)

³ Translation of *De anima*, pp. 140, 141, 142. In these and the following quotation from Cassirer, I myself have emphasized some points by the use of italics.

functioning of the soul. Its status in the soul is *somewhat like that of God, on Aristotle's view, in the universe at large; they are both purely actual, and their existence is, in their different ways, a condition of the actualization of the particular potentials with which they are concerned.* It is not therefore surprising that the two have sometimes been erroneously identified. *The active intellect, however, may be divine, but it is not itself God.*

Cassirer concludes similarly (*Aristoteles' Schrift*, 180), though it leads him to a confession of defeat:

Any conception of the positive nature of the active reason, then, seems impossible. When Alexander of Aphrodisias identifies the active reason with the divine, *even though we recognize that Aristotle could not have meant that*, we may find it understandable for the reason that Aristotle says chiefly what the active reason is not [?W.K.C.G.], and in these statements (*Bestimmungen*) the divine and the active human intellect are in fact scarcely any longer to be distinguished. The relation between them remains obscure, and it is also inexplicable how the separated substance of the active reason is united with the human soul.

RIST accepts that ἐν τῇ ψυχῇ at 430a13 could well mean no more than 'in the case of the soul', but regards χωρισθεῖς at line 22 as proof positive that the active reason is 'at some time at least not separated from the passive'. His own view is that 'Every soul therefore contains its own individual Active and Passive Intellect'; and again, 'there is within each individual soul an Active and a Passive Intellect'. He does not mention the difficulty involved in assuming millions of pure actualities.² He notes that Theophrastus describes the active reason as ὁ κινῶν as well as ὁ ποιητικός, and remarks on the genuinely Aristotelian nature of the terminology. Aristotelian it certainly is, but if this is significant at all, does not 'mover' bring us even closer to the supreme Reason of the *Metaphysics*?³ Rist actually goes on to compare the doctrine of motion in *Phys.* 8, where Aristotle makes the point that 'all souls, and indeed everything in motion, require an efficient as

² 'Notes on *De anima* 3.5', from *CP* 1966, repr. in Anton and Kustas, *Essays*, 505-21. I hope Professor Rist will forgive me for making a kind of object-lesson out of his article. I choose it because he presents a particularly well-argued case, so that my own minority view will be especially strengthened if it can be shown that some of his evidence may in fact point to a different conclusion.

³ See p. 323 n. 1 above. He adds that Theophrastus, as quoted by Themistius, spoke of the active reason as ἐννέμενον, asking ἐννέμενον τί δὲ τί οὐκ αἶσθ; I do not know what was in the commentator's mind, but he cannot well have meant 'Being (or "if it is") within us, why not for ever?', because after all we do not last for ever. Or does he mean that the active reason is sometimes in us and sometimes not?

⁴ Cf. *Met.* 1071b12 εἰ ἐστὶ κινήτικόν ἢ ποιητικόν... So God is not only νοῦς but νοῦς ποιητικός.

well as a material cause'. Noting that 'the first cause is not in fact self-moved but unmoved', he adds 'but this does not concern us here'. Surely we are very much concerned with an argument purporting to show that the first cause of psychical as well as other kinds of motion is transcendent.

Of 430a19-21 Rist says that because (among other things) the active reason is, as he believes, 'in the soul of the individual' (his italics), these words cannot refer to it. If, however, it is, as I believe, the transcendent First Mover, they become entirely appropriate. We saw (pp. 261f. above) that, to explain how the object of the First Mover's thought can be itself, although we are accustomed to look on thinker and object of thought as two different things, Aristotle needed only to appeal to the general principles of his psychology. Here we look at it from the other end, but the same point is made. 'Knowledge in act is the same as its object' (*De an.*); 'in some cases knowledge is the object' (*Metaphysics*).¹

Rist himself maintains that 'the Active Intellect which thinks continually and cannot know the world must be thinking . . . of itself', and that 'in this respect it is comparable with God who is νόσις νοήσεως in the *Metaphysics* (1074b33)'. Hence, although 'Scarcely anyone nowadays is disposed to take seriously the identification of the Intellect with God made by Alexander of Aphrodisias', 'we can at least learn to see how such an identification might have seemed possible'. But Aristotle himself was never one to multiply entia beyond necessity,² and finally, if Rist could admit that it is God who is introduced here as the ultimate cause of psychical as well as physical events, it would relieve him of what he himself calls a fundamental difficulty: how, namely, if the active reason is in the individual soul, it can also exist separately, when the human soul, as the form of the body, is by all the principles of Aristotelianism inseparable from it.

Nuyens (*Psychologie*, 296-312) is informative on previous opinions, and gives a very helpful analysis of ch. 5, but his conclusion is tantalizing. Unlike Rist, he regards the creative *nous* as something external to ourselves, yet strongly denies that it is the divine Mind (p. 303): 'Chez Aristote, au contraire, il n'y a pas la moindre indication permettant de croire que par le ποιητικόν il désignerait l'intelligence divine.' One naturally wonders therefore where it is to be fitted into the scheme of things, but here he cannot help. He concludes, in fact, that Aristotle himself did not know: 'La relation

¹ *De an.* 430a19-20 τὸ δ' αὐτὸ ἐστὶν ἢ κατ' ἐνέργειαν ἐπιστήμη τῷ πράγματι; *Met.* 1074b38-75a5 ἐπ' ἀνίον ἢ ἐπιστήμη τὸ πρᾶγμα . . . οὐχ ἑτέρου οὐδ' ὄντος τοῦ νοουμένου καὶ τοῦ νοῦ ὅσα μὴ ὅλην ἔχει τὸ αὐτὸ ἐστὶν καὶ ἡ νόσις τῷ νοουμένῳ μία. On a small point, the use of ἐπιστήμη as the equivalent of νόσις at 1075a1 does not support Rist's claim that 'it is most unlikely that Aristotle would use the word ἐπιστήμη of the Active Reason in any case; νόσις would be more appropriate'. But in fact we need look no further away than *De an.* 430a3-5.

² *Phys.* 259a8-10. See p. 244 n. 1 above.

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entre la ψυχή et le νοῦς est resté pour lui un mystère dont la solution lui est échappée.' In Mure's opinion too, 'how efficient reason should at once constitute and transcend the individual thinker is beyond Aristotle's power to explain' (*Arist.*, 219).

Well, if that is so, there is no more to be said. Heraclitus has the last word: 'The bounds of soul you would not discover, though travelling every road: so deep a *logos* has it.'

XV

THE PHILOSOPHY OF HUMAN LIFE

Introduction: Ethics and politics

Ethics and politics (to give his words their established translation) constitute for Aristotle one continuous study which he calls the philosophy of human life.¹ Their relationship has perhaps been best expressed by Stocks. The subject of both is the good for man, the end to which all human activities are directed, and 'The Ethics sets out the form of the good life as it may be realized by the best men in a good state, while the Politics exhibits the constitutive principles of the good state itself.'² At the beginning of the *Ethics*³ the political art is called the architectonic or sovereign art, which studies the final goal of human action. Even if the good is the same for an individual and for a city, the good for a people and a city is 'greater and more complete, finer and more blessed (θεϊότερον)'.⁴ 'These', he proceeds, 'are the aims of the present study [i.e. ethics], which is of a political nature.' (Cf. *Rhet.* 1356a26-27.) To the political art all others are subordinate (he mentions military command, rhetoric, management of home and estate), and it has charge of education, 'what subjects are to be learned, by whom, and for how long'. Such an art is not to be lightly approached; those who would learn of 'what is fine and just, and political matters in general' must be mature both in years and in character.

¹ ἡ περὶ τὰ ἀνθρώπινα [οὐ ἀνθρώπινα] φιλοσοφία, *EN* 10, 1181b15. It will be convenient to discuss them under separate headings, but no one should be surprised to find descriptions of the political art taken from the *Ethics* and vice versa. Cf. *EN* 1894b11.

² *A's Defn. of the Human Good*, 6 (italics added). See also Newman's *Politics* II, app. A, 'The Relation of the teaching in the Nicomachean Ethics to that of the Politics', and Barker, *PTPA*, 247-51.

³ I.e. the *Nicomachean Ethics*. See p. 338 below.

⁴ In bk 6 (1142a9-10) he suggests that domestic economy and a political framework are in any case conditions of personal well-being. That the happiness of each individual and that of a whole state are the same thing is maintained at *Pol.* 1324a5ff., though by a rather curious argument. Cf. also 1325b30-32, 1334a11-13.

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It may seem surprising that very soon after this Aristotle should mention three life-styles in ascending order of merit, first the apolaustic aiming at pleasure, next the political which seeks honour,¹ and highest of all the philosophical (*EN* 1095b 17ff.). This is the first hint of a tension which will haunt us throughout the *Ethics*. It is true in fact, if not ideally, that even the most enlightened statesmen, a Pericles say,² have set great store by honour and much less by philosophy. The philosopher-king is an unattainable ideal, as even Plato came to see; and the clash between fact and ideal is a recurrent feature of the *Ethics*. It does not reflect an inconsistency in Aristotle's thought, but only his awareness of the awkward truth that, whereas philosophical and scientific pursuits (as he believed) constituted the perfect life for man, the life that was peculiarly his own because it employed talents which he alone of earthly creatures possesses, yet owing to the duality of human nature, animal and spiritual, no one can pursue these activities solely and continuously and some are not fit for them at all. Food, shelter and society are necessities for everyone. So, although in book 10 of the *Ethics* he insists on self-sufficiency as a mark of the highest good and declares the intellectual activity of the philosopher to be the most self-sufficient of all pursuits,³ there is always a qualification. In the first book, for example, we find: 'By self-sufficient we do not mean sufficient for one man only, living a solitary life, but including parents, children, wife, and in general friends and fellow-citizens, for man is a naturally social being.'⁴ Anyone either incapable of sharing in social and political life, or too self-sufficient to need it, is either a beast or a god (*Pol.* 1253a 27-29).

The city or state (the Greek *polis*), like more primitive societies which preceded it, is a natural growth, originating in the bare needs of

¹ And as he points out in *EN* 10 (1177b 12), lacks that essential element in the good life, leisure.

² His famous sentence φιλοσοφούμεν ἄνευ μαλακίας (Thuc. 2.40) referred to general culture rather than philosophy. Pericles is for A. an example of the φρόνιμος, the man of practical wisdom (1140b 7-10).

³ *EN* 1176b 5-6, 1177a 27-28, b 19-24. Cf. *Pol.* 1253a 148' αὐτάρκεια καὶ τέλος καὶ βέλτιστον. This is developed on pp. 390ff. below.

⁴ *EN* 1097b 8-11, φῶσι πολιτικόν (repeated in the *Politics*, 1253a 2-3, 1278b 19). Perhaps 'born for citizenship', as Ross in the Oxford trans. (Düring has 'staatsbikend', *Arist.*, 475.) 'Naturally political' has the wrong associations. The rejection of the solitary life in the *Ethics* recurs at 1157b 21-22, 1169b 16-19, 1170a 5-6.

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life itself, but maintained to ensure its quality.¹ Its superiority to the individual does not, in Aristotle's eyes, involve any 'sacrifice of the individual to the state', because only as an active member of a well-managed *polis* can the individual lead a full life and realize his own potentiality. The good for both is the same. 'Evidently then the same life is best for each human being individually and for cities and men as a whole' (*Pol.* 1325b30-32). Again: 'Since the aim of individuals and of cities is the same, and there must be the same standard for the best man and the best constitution, both must evidently possess the virtues that go with leisure.' But these, he goes on (grimly determined, as throughout these treatises, to be practical), have to be earned and defended, wherefore the 'busy' arts must not be neglected. The material necessities of life must be supplied, and, together with the city's freedom, guarded against attackers. As the proverb says, there is no leisure for slaves. The arts of leisure, of which philosophy is the chief, are not to be enjoyed without courage and endurance (1334a11-23). In general, to bring about a household or a city calls for a developed moral sense, an awareness of right and wrong, justice and injustice and the like, the capacity for which combines with intelligence to distinguish man from the lower animals (1253a9-18). Ethical training is the indispensable foundation for political life, or rather perhaps for citizenship.

The *Nicomachean Ethics* ends with a passage marking the transition from it to the *Politics*, with which the writer plans to complete his 'philosophy of human life'. The chief interest of this bridge-passage is that it twice mentions 'the collections of constitutions'. First, at 1181b6-9 we have: 'Perhaps the collections of laws and constitutions may be useful to those who are capable of judging scientifically which are good and which bad and which laws suit which situations.' Secondly, the programme promises, after the usual review of predecessors, 'to consider, in the light of the constitutions collected ["which we have collected", Ross], to consider what influences preserve and destroy states'. This must refer to the collection of 158 constitutions (D.L. 5, 27) compiled by Aristotle and his colleagues, of which only the Athenian is (at least in large part) available to us.

¹ *Pol.* 1252b29-32. It is the *τῶς* of earlier forms of association. In *Articles on A.* 2, 113-14, von Fritz and Kapp discuss A.'s thesis that the city-state is a natural phenomenon.

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ADDITIONAL NOTE

The Politics, the Constitutions and the end of the Ethics

Cf. pp. 51f. above. Before the recovery of the *Ath. Resp.* in 1890, many scholars thought the whole collection un-Aristotelian, as did the editor of the fragments, V. Rose, but it is now generally agreed that the *Constitution of Athens* at least is by Aristotle himself. Stewart, who agreed with Rose and Susemihl in his publication of 1892 (*Ethics* II, 472), must have missed by a hairsbreadth knowledge of the newly-discovered *Constitution of Athens*, first published in 1891. Unfortunately not everyone is agreed about the genuineness of the bridge-passage in *EN* itself. The Greek scholar Michelakis indeed claims reasonably enough that the discovery of the *Ath. Resp.* has put it beyond doubt (*Practical Principles*, 94 n. 39). This I find convincing, but Tredennick in the Penguin translation (342 n. 1) notes that opinions have been sharply divided, and the question, he thinks, 'does not yet seem to have been solved'. However, von Fritz and Kapp assume the genuineness of the passage (as I believe we can) and consider it 'very fortunate that we have such a revealing description of the part that the collections played in Aristotle's school' (*Articles on A.* 2, 122). Some arguments on both sides are highly subjective, e.g. Grant simply notes παραλιπόντων τῶν προτέρων (1281b12) as a 'disdainful' dismissal of Plato by Aristotle, whereas to Stewart it appeared quite impossible that Aristotle should have said it. Moreover most scholars have thought that the programme outlined at the end of *EN* does not correspond to the actual treatment in the *Politics*, and this has been used by both sides, some arguing that an editor, others that Aristotle himself, would be likely to produce the more accurate summary. Ross, however, cut this knot by showing in masterly fashion that the *Politics* in fact 'carried out the scheme laid down in the *Ethics*, but with additions . . . the necessity of which he saw in the course of carrying out his plan'. (See *Symp. Ar.* 1, 7-10, and his final note in the Oxford translation.)

Internal evidence shows that the *Ath. Resp.* was written between the years 329 and 326. (See Jaeger, *Aristotle*, 327 n. 1.) This may seem rather late if it was intended as part of a collection of material on which what we know as the *Politics* was subsequently based. It need not, however, prevent us from believing that the last paragraphs of the *Ethics* were written by Aristotle himself, for the *Politics*, though incorporating notes from various periods of work, in its present form belongs pretty certainly to his latest years.¹ Von Fritz and Kapp go so far as to say that *Pol.* IV-vI, and parts of III, could not

¹ That it is later than *EN* is confirmed by the fact that it refers to it. See 1261a 31 ὁμοίᾳ ἐν τοῖς ἠθικοῖς εἰρηται πρότερον, where the reference is to 1132b 33-34.

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have been written without the help of the 'enormous enterprise' of the collection of political constitutions in Greece and even in some non-Greek communities.

ETHICS

... young men, whom Aristotle thought
Unfit to hear moral philosophy.

Shakespeare¹

Aristotle's *Ethics* has always aroused the most diverse opinions. Here are a few samples.

'That work', wrote Basil Willey, 'should surely rank high in any list of the world's most boring classics'; and Bertrand Russell, 'The book appeals to the middle-aged, and has been used by them, especially since the seventeenth century, to repress the ardours and enthusiasms of the young. But to a man with any depth of feeling it is likely to be repulsive.'

Jane Harrison on the other hand, when not middle-aged but an enthusiastic undergraduate at Newnham, to which she had come from a rather narrowly evangelical family background, found that reading the *Ethics* 'was like coming out of a mad-house into a quiet college quadrangle... The doctrine of virtue as the Mean – what an uplift and revelation! The notion of the *summum bonum* as an "energy", as an exercise of personal faculty... I remember walking up and down the College garden, thinking could it possibly be true?'

In the eyes of another literary critic, F. L. Lucas, 'It remains, to me at least, an enormous relief to come back from Plato to common sense – even that somewhat prosaic and pachydermatous common sense which may at moments give the reader of Aristotle a vision of a very large and sagacious elephant picking up very small pins.'

The philosophical scholar (in this case Düring) remarks that 'of no other work of Aristotle do we possess such an imposing series of valuable commentaries'. This is understandable, for as G. H. von Wright once said, 'there is no other work in philosophical literature which sets forth the fundamental problems of ethics in so simple and at

¹ *Troilus and Cressida*, Act ii sc. 2; cf. *EN* 1095a2-3. The word is *πολιτικός*, but Shakespeare (or his informant) was correct in translating it 'moral philosophy'.

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the same time so penetrating a way'. Stuart Hampshire chose to lecture on the moral theories of Aristotle and Spinoza because these two 'seem to me to have the greatest claim on their merits to the attention of a contemporary audience'.

Whatever one's personal opinions, no one disputes the fact with which Jonathan Barnes begins his introduction to the Penguin *Ethics*, that 'the system which Aristotle expounds and advocates in the *Nicomachean Ethics* stands as one of the most celebrated and influential of moral philosophies'.¹ Speaking of its 'profound and lasting effect', he adds that 'by later philosophers it has been fervently embraced and critically rejected, but never ignored; and in certain crucial respects it has helped to shape and mould the common moral consciousness'.

This verdict would have pleased Aristotle, for 'to mould the common moral consciousness' was precisely his aim in writing the *Ethics*.

PRELIMINARY NOTE: THE DOCUMENTS

The ethical writings attributed to Aristotle have come down to us in three forms, known respectively as the *Nicomachean*, the *Eudemian* and the *Great Ethics*.² The *Nicomachean* are universally believed to be Aristotle's own work, though probably left unfinished and in need of revision when he died. Of the *Eudemian* version the prevailing view in the nineteenth century, under the influence of Spengel (see Grant, *Ethics* I, 21), was that it was the work of Aristotle's pupil Eudemus of Rhodes. Grant even speaks of the disciple's 'far inferior writing', less clear than Aristotle's own in this 'second-hand and touched-up system' (pp. xvi, 31). Today most scholars, with the same work before them, regard it as a genuine production of Aristotle, representing an earlier stage of his philosophy than the *Nicomachean*.³

¹ Nevertheless the volume *Theories of Ethics*, in the series *Oxford Readings in Philosophy*, containing twelve essays on ethical themes, has none on A., and only four unimportant passing references.

² Commonly referred to in their Latin forms and abbreviated as *EN*, *EE* and *MM* (*Magna Moralia*). I omit *On Virtues and Vices*, a collection of definitions of ethical concepts which occupies just over 4 columns in Bekker's text. See on it Düring in *RE Suppl.* XI, 317f. (Cf. p. 50 above.)

³ More details in *RE Suppl.* XI, 282f. Both *EE* and *MM* have been edited with extensive commentary by R. Dirlmeier, who (exceptionally but with Düring's approval) argues that *MM* is an early lecture of A.'s though, if so, he must have revised it in the Lyceum period. (See Düring, *Arist.*, 438, *RE Suppl.* XI, 281f.) O. Gigon, acknowledging that he is departing from Dirlmeier's 'indispensable' commentary, sees the *MM* as in parts a badly worn ('libel zerlesen') handbook, product of a method of exegesis and discussion already slipping into routine, though it

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The reasons for the titles *Nicomachean* and *Eudemian* are not known,¹ but they appear to go right back to the edition of Andronicus. All three are mentioned by the Platonist Atticus in his polemic against Aristotle, and Cicero knew that the *Nicomachean* were already attributed, by that title, to Aristotle himself, though for his part he saw no reason why they should not be by his son Nicomachus.² Following Greek custom, Nicomachus was called after his grandfather, who may also have a claim to be the eponym of *EN*. Eudemus may have posthumously edited Aristotle's earlier production, and the *Nicomachean* version may have been named (whether by Aristotle or – more probably – his successors) in memory of the untimely-dead Nicomachus, but we do not know.

A much-debated problem arises from the substantial identity of three books in *EE* (5–7) with three in *EN* (4–6), which include in *EN* 6 the all-important topic of *phronēsis* (practical wisdom). Dirlmeier in his impressive commentaries on the two works maintains that the books belong to *EN*, and represent a re-writing by Aristotle of the earlier *EE*, whose original books 5–7 were lost and replaced by the *Nicomachean* version.³ They will be treated here as the work of Aristotle himself and taken together with the rest of *EN*. The material for the present section will be mainly drawn from *EN*, and the name *Ethics* will apply to this work.

used important texts and is useful for the interpretation of *EN* and *EE*. (*Mus. Helv.* 1959, 192f.) The latest and most thorough examination of this question is Kenny's in *The Aristotelian Ethics* (1978), to which the reader may be referred for an extensive bibliography and a full and fair appraisal of other views. He himself examines the question from the historical, philosophical and stylistic points of view, and concludes that the arguments for the comparative lateness of *EN* and earliness of *EE* 'are inadequate and should never have secured the almost unanimous assent of the learned world'.

¹ For Düring's early suggestions see p. 50 above, and for Andronicus p. 61. Düring's slighting reference in his *Aristoteles* (p. 438) to the 'Jaeger-epoch' as to something past and done with is hardly justified.

² Atticus (2nd cent. A.D.) ap. Eusebius, *PE* 15.4 (Düring, *AABT*, 326); Cic. *Fin.* 5.5.12 ('non video quare non potuerit patri similis esse filius'). But Nicomachus is reported to have died in battle as a mere youth (μικροτάτος), Aristotle ap. Eus. *PE* 15.2.10 (Düring, *AABT*, 376). For further evidence and theories about the title see Rodier, *Études*, 177–9 (originality of 1897). However, Kenny's interpretation of the passage in Cicero should be noted, as well as his remarks on the edition of Andronicus (*Ethics*, 16–18).

³ Dirlmeier, *EN* 509, *EE* 362. Düring approves, *Arist.*, 454f., *RE Suppl.* xi, 286. For φρόνησις cf. G. E. R. Lloyd, *Arist.*, 95: 'In ethics, for instance, a comparison between the two main treatises, the *Eudemian* and the *Nicomachean Ethics*, reveals some difference in his conception of φρόνησις and it is likely that, as Jaeger already argued, the *Eudemian Ethics* represents a stage in Aristotle's thinking before he had fully worked out his doctrine of the relation between practical intelligence and moral virtue. Both treatises, however, specifically criticize the Platonic Form of the Good, and in doing so they incorporate some of his general philosophical objections to the theory of Forms; and both reject the idea that ethics is based on an exact enquiry which is suggested in one of our sources for the *Protrepticus*.' Kenny, however, through his own thorough and painstaking study, is convinced that the original home of the books was *EE*.

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Ethical theory and the Platonic Forms

Aristotle wrote the *Ethics* from a sense of duty. He had no doubt whatsoever that a life devoted to the pursuit of scientific and metaphysical enquiry – *rerum cognoscere causas* – with no ulterior practical motive was, for all who like himself were capable of it, the highest, best and happiest. Book 10 makes this point clearly and emphatically. Nevertheless, as pointed out at the beginning of this chapter, not being gods we cannot live always at this level. Even the philosopher can only pursue his researches if provided with the needs of the body and the apparatus of social and political life. Aristotle's ideal philosopher was no desert-hermit: he can indeed, this most self-sufficient of men, carry on his researches in solitude, but even for him 'it is doubtless better to have colleagues' (*EN* 1177a32–35). The practice of the moral virtues demands certain external conditions, but the theoretician can pursue his chosen occupation without these, indeed they may even be called a hindrance to it; but in so far as he is a man living among men, he chooses to act morally. To be human, then, he will have the same needs, although perfect happiness is found not in moral action but in philosophy (1178b1–8).

How the abandonment of Plato's theory of Forms led to a separation between ethics and the philosopher's search for exact knowledge of the truth has been explained in the section on the *Protrepticus*, to which the reader must turn for a number of passages in the *Ethics* illustrating the divergent aims and methods of the two studies (pp. 78–9 above). To supplement these, notice the blunt alternative assumed in 'our aim is not knowledge but action' (1095a5–6). Elsewhere Aristotle is emphatic that genuine philosophical knowledge is not only of a fact (the 'what') but also of its cause (the 'why'),¹ and nothing could point the contrast more strikingly than his admission, in the course of characterizing the method of ethics as inductive, that 'we begin from the fact, and if that is sufficiently clear through good practical training, the pupils in morals and social matters generally will have no need of the cause as well'² (1095b4–7). And in the *Metaphysics* he wrote

¹ See pp. 172, 173, 176, 217 above.

² Ross's addition of 'at the start' in the Oxford translation has no counterpart in the Greek. In

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(993b20-23): 'The aim of theoretical knowledge is truth; of practical, deeds. Practical thinkers, though they may consider what is the state of affairs, do not study the cause in itself but in relation to something else, viz. the immediate situation.'¹

The Platonic Form of the Good is mentioned early in book 1, at 1095a26. ('Some have thought that beside the many good things there exists also an absolute, which serves for all of these as the cause of their being good.')² Its criticism and rejection follow in ch. 6 (1096a11ff.), in the course of which Aristotle gives away his failure to follow Plato's distinction between the temporal and the eternal by defining the latter as merely 'longer-lasting'. But that is by the way. As in the realms of knowledge and being, so in morality the chief objection to Plato's transcendent absolutes is their remoteness, their lack of contact with the world of experience. Parallel to the criticism in the *Metaphysics* that the essence or form, and hence the explanation, of anything cannot be separate from the thing itself,³ we have in the *Ethics* (1096b32-35): 'So too with the Forms: even if there is one single Good predicated universally or existing separately all by itself, it is clearly not to be realized in action or acquired by man. Yet something of that sort is what we are looking for now.'

To the fault of separation Aristotle here adds that of an indiscriminating universality. This too we have met before. Even theoretical science must get as near the concrete individual (the 'primary substance') as possible, and practical enquiries demand not only theory but experience and practice. The doctor cures not 'man', nor even

case anyone should incautiously think that when competent philosophers use the same word 'ethics' (or *ēthica/ἠθικά*) they mean the same thing, here are some quotations from Moore's *Princ. Ethica* (pp. 20, 6, 63). 'The direct object of ethics is knowledge not practice.' 'The main object of Ethics, as a systematic science, is to give correct reasons for thinking that this or that is good.' (The italics are Moore's.) 'If anyone does not care for knowledge for its own sake, then I have nothing to say to him.' Poor Aristotle! Few people have cared more for knowledge for its own sake, but he thought it his duty to descend into the cave and offer practical help to his fellow-men, and that this was the proper purpose of an ethical study.

¹ Once and, I think, once only in connexion with political science (*Pol.* 1279b11-15), he speaks of the necessity 'for one who is pursuing every branch of philosophy and not confining his attention to action, to overlook or omit nothing, but to bring to light the truth about each subject'.

² It is rather touching that immediately after this A. goes out of his way to praise Plato by name for insisting on the distinction between arguments to, and those from, first principles.

³ *Met.* 991a12-14, b1-2, quoted above on p. 244. The notion of the Forms as paradigms is also rejected in both *EN* and *Met.* Cf. 1097a1 with *Met.* 997a20-22.

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'influenza patients', but Socrates.¹ Since ethics is for Aristotle a purely practical study, it ranks in this respect with the technical skills, which, in addition to more philosophical considerations,² he brings forward in corroboration of his point. 'It is hard to see how a weaver or a carpenter will be helped by knowing this "Good itself", or how one who has gazed on the Form itself will be a better doctor or general. The doctor appears to study not even health in this way [sc. as a Form or universal], but the health of a human being, or rather, I think, of one particular human being; for it is individuals that he heals.'

Human nature and the function of man

The nature of the task that Aristotle had set himself is now beginning to appear. He was no Sophist.³ He disapproved of the Sophists' behaviour in practice no less than of their relativistic moral theories. At the same time he had cut himself adrift from the secure anchorage of the Platonic Forms. The problem now, to which in one way or another most of the *Ethics* is devoted, was to construct an ethic which, without relying on the 'empty metaphor' of a transcendent Good to be copied or in some mysterious way 'shared in' by human goodness, should yet maintain standards and principles none the less secure for being based on a realistic assessment of human nature and human needs.

The word 'human' here is to be contrasted not only with what, if it existed, would be above it – the ideal – but even more emphatically with what is below it, the irrational life of animals. If asked to name one common and ultimate aim in human life, one end to which *all* our actions are directed, as each separate occupation or skill has its own (health in medicine, victory in strategy and so on), everyone would doubtless agree in replying 'happiness'.⁴ This, however, is by itself an

¹ See passages quoted on pp. 141f., 187. In *EN* 10 (1180b15ff.) the need for individual medical treatment is mentioned in connexion with the advantages of private (family) over public or state education.

² Quickly dismissed as 'more suitable to a different kind of philosophy' (1096b30–31).

³ Cf. his definition of a Sophist as 'one who makes money out of an appearance of wisdom without the reality' (*SE* 165a22–23). On A.'s position with regard to ethical relativism Stewart has a helpful paragraph (*Ethics* 1, 30).

⁴ εὐδαιμονία. Like most people, I do not find 'happiness' an exact fit, but it is the nearest that English can offer. It does not, as has been alleged, make A. a 'eudaeonist' in any pejorative sense. For him the good for man consists in 'activity of the soul according to virtue' (1098a16–17), and this may include dying for one's country, for courage is a virtue. The good man will

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empty platitude, and prompts the next question: In what does happiness consist? Opinions differ. The poor say wealth, the sick health, others pleasure or honour. For the correct answer, thinks Aristotle the teleologist, we must discover the proper occupation or function (*ergon*) of man in virtue of his common humanity. That everything in nature aims at some end was of course one of his most firmly held beliefs. Can it be, he asks rhetorically, that different sorts of people – carpenters, cobblers and the like – have their own proper jobs and act accordingly, as do the parts of the body – eye, hand and foot – but humanity as such has none? (1097b28–33.) After his attack on Plato for his obsession with the Universal, one might expect Aristotle to answer Yes indeed: there can be work for doctors, carpenters and every other kind of professional in their separate capacities, but scarcely for men as such, or a semi-abstract entity called ‘man’, which according to the doctrine of the *Categories* is only a ‘secondary substance’.¹ He was more of a Platonist than he would always admit, and in fact much of this part of *EN* I comes, even in expression, straight from the *Republic*.² Nevertheless, as in psychology with the *psychē* (pp. 282–3 above), although willing to offer a definition of virtue in general, he insists that, especially for practical purposes, it is more helpful to enumerate the individual virtues and consider them separately. ‘They are wrong who say in general terms that virtue is “well-being of the soul” or “right action” or the like. Better to enumerate the virtues, as Gorgias did, than to offer such definitions’ (*Pol.* 1260a25–28).

The function of *x* is determined by its capacities, for as in Plato’s definition, it is ‘what *x* alone can do, or can do better than anything have more to lose by death than most, yet he will face it because, though painful, it is noble (*καλόν*). ‘It is not true therefore that the exercise of all virtues is pleasant, except in so far as they attain their end’ (*EN* 1, 1117a29–b16; cf. 1, 1100b30–33, and p. 390 below). On the disadvantages of ‘happiness’ as a translation, Cooper has a useful note (*Reason and Human Good in A.*, 89 n. 1), but I wish I liked his ‘human flourishing’ better.

¹ The phrase τὸ ἔργον τοῦ ἀνθρώπου occurs at 1097b24–25. For secondary substance see *Catt.* 2314–17 (p. 141 above).

² Cf. *Rep.* 352e54a. Everything – say a horse, an implement, a bodily organ – has its particular function (ἔργον), defined as ‘what it alone can do, or can do better than anything else’, which it performs by its own particular virtue (ἀρετή). So also is it with the *psychē*, which as usually in Plato is not the bare life-principle but specifically the human mind (A.’s τὸ λέγον ἔχον), for its function includes supervision, control, deliberation. The corresponding virtue is what Plato calls justice, so the just man will ‘live well, and living well (τὸ ζῶν) will be happy’ (εὐδαιμόνων 351 d, 354 a). At *EN* 1098b20–22 A. copies this exploitation of the ambiguous εὖ ζῆν (for which see vol. IV, 442 n. 4).

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else' (*Rep.* 353a). In the case of man there is no doubt of his peculiar faculty. Life he shares with plants, sensation with animals. Only *logos*, the power of reasoning, is his alone,¹ so his proper function as a human being is 'an activity of the *psychē* according to *logos*, or not without *logos*'. With *logos* as distinctively human goes, as already noted, the moral sense or awareness of right and wrong,² and the good for man becomes an activity of the *psychē* (an equally accurate rendering would be 'an exercise of life') in accordance with virtue.³ There follows a striking compromise between Platonism and social realism or sheer common sense. It would be paradoxical to maintain that one who suffered the misfortunes of a Priam lived a happy and blessed life.⁴ Since therefore the good for man is intended to correspond to the accepted notion of happiness, external circumstances must be favourable also, and the happy man becomes 'one who is active in accordance with complete virtue and adequately provided with external goods not for any chance period but a complete life'.⁵ In bk 7 (1153b14-21) the point is emphatically repeated. Happiness, as perfect in itself, must include pleasure. Even if most pleasures are worthless, not all are. To be happy a man needs both bodily and external advantages. Those who say that a man on the rack, or in dire misfortune, is happy if he is good are, whether intentionally or not, talking nonsense. The emphasis varies. Reading *Pol.* 1323b23-29 one would suppose that action conformable to virtue and practical wisdom is the sole condition of happiness. After all, he says, God is happy and blessed without any external goods, through the perfection of his own nature. But a few lines later he makes, as in the *Ethics*, the point that a modicum of worldly goods is in any case necessary for the exercise of certain virtues.⁶

¹ Plato again, of course. Cf. especially λογισμῶν at *Phdr.* 249b-c and vol. v, 416.

² *Pol.* 1253a15-18, p. 333 above.

³ 1098a16-17. Just what is meant by ἀρετή, 'virtue', we shall see shortly.

⁴ He is εὐδαίμων οὐ μὴν μακάριος γὰρ (1101a7, in presumably conscious opposition to Plato, *Rep.* 354a, μακάριος τε καὶ εὐδαίμων). Yet τῶν μακαρίων at 1100b34, whereas according to 1100a8-9 no one who suffered Priam's fate could even be called εὐδαίμων. The attempt to do justice both to Plato and to his own common sense seems to have led to some confusion of thought, or at least of terminology.

⁵ 1101a14-16, 1153b14-19. Happiness, the goal of life, is not on that account to be confused with material good fortune, which if excessive may even impede the appropriate activity.

⁶ *EN* 1099a31-b2. In bk 10 he mentions liberality and justice (1178a28-30). This is surely a reminiscence of old Cephalus in the *Republic* (331a-b).

Human nature and the function of man

Nevertheless to call wealth the *cause* of happiness (as men do) is as absurd as to attribute the brilliant playing of a musician to his instrument and not to his skill (*Pol.* 1332a25-27). Moreover 'the truly happy man can never become miserable, for he will never do anything hateful or base, and being truly good and wise bears every change of fortune becomingly and always makes the best of circumstances'. In fact to act virtuously is in itself a pleasure to the good man.¹

The place of altruism in a nominally self-regarding life is strikingly brought out in book 9. Part of the relevant discussion runs as follows (1169a15-24, 34-b2):

For the wicked man, what he does is at variance with what he ought to do, but the good man does what he ought. Reason (*nous*) always chooses the best for itself, and the good man obeys reason. It is true also of the good man that he does much for his friends and country, even laying down his life for them if necessary. He will renounce wealth and honours and in general the benefits that men fight for, keeping for himself nobility; for he would rather enjoy intense pleasure for a short time than mild pleasure for longer, and live nobly for a year than haphazardly for many... In all praiseworthy actions the good man is seen to allot to himself a greater portion of what is noble. In this sense therefore we should be lovers of self, but not in the sense in which most men are.

The inconsistency between this and the requirement that happiness can only be achieved in a complete life has been pointed out by others.² At any rate Aristotle has warned us. The *Ethics* is no work of scientific theory but a practical manual, a guide to living. As such it cannot aim at consistency, for life itself is full of inconsistencies.³

In all this Aristotle's deference to received opinions, always a feature of his thought (cf. pp. 90f. above), is especially to the fore. 'We must', he says, 'consider the principle in the light not only of a logical argument, its conclusion and premises, but also of what is commonly said about it.' After mentioning a few typical conceptions of happiness he continues: 'Some of these views are popular and traditional, others

¹ 1100b33-01a3, 1099a7-21.

² See Hardie in Moravcsik's *Aristotle*, 319.

³ Consistency is a feature of τὸ ἀκριβές, and τὸ ἀκριβές οὐχ ὁμοίως ἐν ἀπανσι τοῖς λόγοις ἐκτετηγμένον: noble and just actions admit of much variety and irregularity; matters of action and advantage have no stability. (See *EN* 1094b12-16, 1104a3-4, and other passages quoted on pp. 78f.)

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held by a few distinguished individuals; and it is not reasonable that either class should be wholly wrong, but more likely that they should be right in one respect at least, or even in most.¹

The virtue of anything, then, its proper excellence or *aretē*, consists as Plato said in fitness to perform its proper function, and the function of man is to engage in rational and mortal activity. Obviously we cannot do this from birth, but babes and children do have within them the 'traces and seeds'² of a fully human character. This Aristotle calls 'natural virtue' as distinct from virtue in the true sense (*κρυπτα*), but it is not what we are looking for. Lacking as it does the admixture of good sense (*nous*), it may be harmful.³ Indeed, like any potentiality (1129a13-14), it can work both ways. *Corruptio optimi pessima*. A bad man will do ten thousand times more harm than a beast. As he says in the *Politics*,

Just as in his perfection man is the best of living creatures, so without law and justice he is the worst of all. Wickedness armed is a most grievous thing, and nature has given men arms intended for use in the cause of intelligence and virtue, which however can easily be used for opposite ends. Without virtue he is the most impious and savage of animals, and the most lecherous and gluttonous.⁴

In this conception of a natural, i.e. potential, virtue, Aristotle finds his answer to the famous controversy over whether virtue was natural (came by *physis*) or merely a matter of custom, convention or law (*nomos*) imposed on human nature in its despoite.⁵

Neither then by nature nor contrary to nature are the virtues implanted in us. Rather we are naturally adapted to acquire them but what matures them in us is habit.⁶

¹ 1098b9-11, 27-29.

² ἔχοντες καὶ σπέρματα, *HA* 388a29.

³ 1144b1-9. Here he says that even animals, as well as children, have the natural virtues, although, considering that these are obviously potentialities, and that which can in no way be actualized is not a potency (*Met.* 1074a24-26), this seems surprising. It is tempting to say that animals can show courage (even if your word for it is *ἀνδρεία*), but their unreasoning endurance (*συμῆ*) might well be thought of as generically different from the virtue of a man leaving home and friends to die for his country. However, A. has in mind his principle of biological continuity set forth at the beginning of *HA* bk 8, for which see pp. 288f. above.

⁴ *EN* 1150a7-8, *Pol.* 1253a31-37.

⁵ The controversy is the subject of vol. II, ch. IV.

⁶ Bk 2, 1103a23-26. ἠθικὴ ἀρετή, which we translate 'moral virtue' is more literally 'virtue of character' (*ἥθος*), and character, says A. (1103a17-18), takes its name, by a slight change, from the *hábē* (*ἥβη*) by which it is formed.

The intellectual virtues: phronēsis

Thus the inculcation of good habits is of primary importance, for as with the arts, but contrary to the operation of a natural faculty like sensation, it is only through performing the activities involved (e.g. playing the lyre) that we acquire the ability to perform them well (1103a26–b2). Hence great responsibility falls on parents to train their children and on the state to educate its citizens. It is no use holding forth on ethical and social theory to someone not yet trained in good habits, and even in natural disposition some will be more amenable than others to parental and civic persuasion. Passion is no less a part of our nature than reason,¹ and can urge men in the wrong direction. In bk 10, in pessimistic mood, he says that to live temperately and hardily is unpleasant to most people, and especially to the young. Moral education demands not only parental upbringing but good laws, for the majority obey compulsion rather than argument, and punishment rather than goodness for its own sake.²

The intellectual virtues: phronēsis

Aristotle divides virtues into those of character and those of the mind, or moral and intellectual,³ and gives as examples of the latter philosophic wisdom, good judgement and practical wisdom,⁴ of the former liberality, gentleness and self-control. Since it is *logos*, rationality, that determines the function of man, we shall not be surprised to find his ethics taking a strongly intellectual turn.⁵ He has retained from Plato the idea of *phronēsis* as the indispensable basis of morality, but modified

¹ Some passions, such as anger, are necessary and natural, others neither natural nor fit for humanity, but only for the beasts (1135b20–22, 36a8–9). The latter are discussed in bk 7 ch. 5. On the *πάθη* and the psychology behind them there is W. W. Fortenbaugh, *A. on Emotion* (1975).

² *EN* 2, ch. 1; 1, 1095b4–6. Cf. 10, 1179b20ff.

³ Bk 2 *init.*; 1, 13, 1103a3–7.

⁴ σοφία, σύνεσις, φρόνησις. It is extremely difficult to find English equivalents for these and other terms denoting intellectual powers. σύνεσις is described (and distinguished from φρόνησις) in bk 6 ch. 11; σοφία at 1141a17–19 as the most accurate of all forms of knowledge, which it combines with intellectual intuition so as to understand first principles as well as their consequences. φρόνησις, the intellectual virtue most closely connected with moral conduct, will be more fully treated here.

⁵ The aim of ethical study is not knowledge but *praxis*, action (1095a5–6). It should be noted, however, that *praxis* and *praktikē*, unlike their nearest English equivalents, are confined to the activities of rational beings. Animals, though they have sensation and desires and we should speak of them as performing actions, have no share in *praxis* (1139a20), which springs from rational choice (*προαίρεσις*, *ib.* 31).

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its significance to suit his more practical ethic and the absence of Platonic Forms. When in the *Phaedo* (69a ff.) Socrates says that the genuine currency in terms of which all pleasures and pains, measured by virtue, are to be bought and sold is *phronēsis*, he means by this word full philosophical insight into the existence of absolute and unchanging moral Forms. In Aristotle it has become an adult power of insight into practical matters, the outcome of an initial aptitude cultivated and developed by experience. Lacking the Forms, this is all we have to rely on, and as Aristotle never tires of insisting,¹ it can never offer the cast-iron certainty of metaphysical truths. He who has attained it is the *phronimos*, and from him we must take our standards. It is not knowledge, for the objects of knowledge cannot be subjected to change, whereas to change things is precisely the province of *phronēsis*; nor is it art (*technē*),² whose concern is production, but 'a state of mind which by the application of reason has reached truth in the field of what is good and bad for man'.³ It deals with part of the field of 'things that admit of being otherwise', where, that is, the change is in our own power.⁴

Phronēsis, being practical sense, 'issues orders' (ἐπιτακτική, 1143a 8, wherein it differs from simple understanding, σύνεσις), and is in consequence⁵ concerned with individual cases. This makes it analogous to sensation in the epistemological field, and for this reason too it cannot be identified with knowledge, which is of the universal.⁶

1142a 23-27. Evidently *phronēsis* is not knowledge, for it is concerned with

¹ To previously quoted passages add 1103b 24-442: 'This must be admitted at the start, that any account of human action must be given as a sketch, not with detailed accuracy.'

² At 1140b 20 A. turns aside for a moment to settle in one sentence a problem thrown up by Plato in the *H. Min.* (373 c ff.). There Socrates propounds the paradox that a man who errs, and even sins (both *ἁμαρτάνω* and *ἁμάρτω*), wittingly is better than one who does so through ignorance. This is true in the *τέχναι*, says A., but not in the virtues, of which *φρόνησις* is one.

³ 1140b 5-6. The main discussion of *phronēsis* is in bk 6 ch. 5. The word is sometimes translated 'practical wisdom', sometimes, for a one-word equivalent, 'prudence'. But 'prudence' has overtones of self-regard and caution from which *phronēsis* is free. (The French 'sagesse', used by Gauthier, comes nearer.) Having explained it, we may do best to stick to the Greek word and its adjective *phronimos*.

⁴ I would translate 1140a 1-2 'Of that which admits of being otherwise, a certain part [τῆ with partitive genitive] includes both products and acts', rather than as in the Oxford and Penguin translations, making unnecessary the note *ad loc.* in the Penguin version.

⁵ Cf. *Met.* 981a 15-17: 'Experience is acquaintance with the individual, *technē* with the universal, and all actions and productions concern the individual.'

⁶ Cf. *An. Post.* 87b 28-35 and pp. 144f., 191 above.

The intellectual virtues: *phronēsis*

the ultimate particular, as we have said, since such is the thing that has to be done. [Cf. 1143a32-33.] And it is opposed to *nous* [here 'intellectual intuition'],¹ for *nous* is of definitions, which cannot be logically deduced, but *phronēsis* is concerned with the individual, of which not knowledge but only sensation is possible.

Being necessarily the fruit of long experience, it cannot be attained by the young, as e.g. mathematics can.²

Of its relation to virtue Aristotle says (1144a6-9): 'The work of man is accomplished in accordance with *phronēsis* and moral virtue; virtue ensures that the aim is right, and *phronēsis* the means to the aim.' And again (1145a5-6): 'Virtue points out the end, and *phronēsis* makes us do what conduces to it.' These statements (with which cf. 1144a20-22), and those on the concern of *phronēsis* with particular cases, make it difficult to agree that, as eminent scholars claim, *phronēsis* 'is not to be reduced to the intuition of particulars and discovery of means'.³

¹ Allan (*Autour d'A.*, 329) suggests that ἀντικείμενα here means not so much 'opposed to' as 'corresponds to, though with a difference'. This seems ruled out by the context. Whatever his meaning here, it does not prevent A. from speaking a little later (1143a35-b5) of a division within νοῦς itself, one kind being ἐν ταῖς πρακτικαῖς. (For the noun to be supplied see Stewart II, 91 (on 1143b1) and Michelakis, *Practical Principles*, 27f.) It deals with individuals and is equated with αἰσθησις. νοῦς detects both τὰ πρῶτα (indemonstrable first principles and definitions) and τὰ ἰσχυρά (particulars), and when it is πρακτικός it deals with the particular and changeable. (Cf. *De an.* 433a16-17.) ὁ ἐν ταῖς πρακτικαῖς νοῦς looks suspiciously like φρόνησις; it is νοῦς in the other sense that was meant at 1142a25. We are used to such peccadillos of expression, which are easily sorted out. νοῦς πρακτικός is also close to διάνοια (*De an.* 433a18, *EN* 1139a33-36, Michelakis, *o.c.* 35 n. 41).

² 1142a11-16. Moreover the young, whether literally children or childish in character, are easily led by their passions (bk I, 1095a2-8). Cf. the quotation from Russell on p. 335 above.

³ Allan in *CR* 1962, 137, referring to Gauthier. Allan himself agrees. See his article, 'A's Account of the Origin of Moral Principles' (orig. 1953, now in *Articles on A.* 2, 72-8. It is a long-standing view, though Zeller, Jaeger and Burnet have opposed it. It is also supported strongly by Michelakis, who writes (*Practical Principles*, 56) that 1145a5-6 'cannot be taken as meaning that the rational element of *Phronesis* concerns only the choosing of the means for attaining the aim of action'. Well, it certainly seems to say so, but the claims that the contrast between σκόπος (τέλος) and τὰ πρὸς τὸν σκόπον (τὸ τίλος) in A. does not correspond to our own distinction between ends and means. When he says (p. 60) that the description of the good man in bk 3 (1139a25-33) is evidence that *phronēsis* includes positing the good end, this hardly allows for the fact (which he also mentions) that the good man must possess ἡθικὴ ἀρετή as well.

Cornford left a ms. note on 1142b31-33 which is worth preserving. A. says there that it is the part of the *phronimos* to have deliberated well (τὸ εὖ βουλευέσθαι), which leads to a definition of εὐβουλία as ἀρετὴς ἢ κατὰ τὸ συμφέρον πρὸς τι τέλος, οὗ ἡ φρόνησις ἀληθὴς ἐπέληψις ἐστιν. Cornford comments: 'Refer οὗ to τὸ συμφέρον. Then the sentence amounts to saying that εὐβουλία practically = φρόνησις, since εὐβουλία = ἀρετὴς κατὰ τὸ συμφέρον πρὸς τι τέλος,

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Whatever the truth about ends and means, *phronēsis* and moral virtue, or goodness of character, are closely and reciprocally related, in the sense that neither can exist without the other. 'It is evident from what has been said that it is not possible to be genuinely (*κυρίως*) good without *phronēsis* or *phronimos* without moral goodness.' Again, '*Phronēsis* is yoked to goodness of character, and that to *phronēsis*, for the first principles of *phronēsis* conform to the moral virtues and correctness in virtue accords with *phronēsis*.' The function of the *phronimos* has been succinctly summed up by Ackrill as follows:

The *phronimos* has to decide what to do in particular and often complicated circumstances. So he must be able to seize the relevant facts, weigh them up, consider alternatives, and reach the right decision. That requires experience, an eye (1143b14) for what is and what is not essential, a 'sense' of what is fitting (1109b23, 1113a1, 1142a27).²

It is an amendment to the Socratic assimilation of all virtue to knowledge or wisdom (*phronēsis*).

1144b15-21. There are two forms of virtue, natural virtue and virtue in the strict sense, and the latter cannot be achieved without *phronēsis*. Hence some say that all virtues are forms of *phronēsis*. Socrates was partly right and partly wrong: wrong to think that all virtues were forms of *phronēsis*, but right to say that they involved *phronēsis*. This is confirmed by the fact that now too all thinkers in defining virtue, after describing the condition itself and what it relates to, add 'in accordance with the right rule'. 'Right' means the rule that accords with *phronēsis*.

Practical good sense and philosophical wisdom can now be contrasted. Sages like Anaxagoras and Thales are called wise but not *phronimoi* because they are seen to be neglecting their own advantage. Men say that they have knowledge of matters high and difficult, marvellous and divine, but not useful.³

φρόνησις = ἀληθής ὑπόληψις τοῦ συμφέροντος κτλ. Thus εὐβουλία (for which it is hard to find an independent position in the scheme) is merged in φρόνησις. The reference of οὗ to τὸ συμφέρον was also suggested by Julius Walter and Burnet (Allan, *Articles on A.* 2, 76). For another interpretation see J. M. Cooper, *Reason and Human Good in A.* 63f.

² 1144b30-32, 1178a16-19. Cf. 1152b7-8.

³ Ackrill, *Ethics*, 257, note on 1142a25. The word αἰσθησις occurs in all three of the passages to which he refers.

⁴ Typical no doubt was the story of Thales being laughed at for falling into a well while studying the stars, eager to learn the mysteries of the heavens but unaware of what was at his feet.

The practical syllogism

How far, for all its intellectual basis, Aristotle's conception of virtue had departed from the world of Platonic absolutes appears in the analogy which he draws between a virtuous disposition and a musical ear. 'The good man, out of his goodness, takes pleasure in virtuous actions, and is pained by bad ones, just as the musical man enjoys beautiful melodies and is pained by the bad'; and again, 'Pleasures differ in kind. One cannot enjoy the pleasure of the just without being just, any more than that of the musical if one is not musical.' Moral judgement and aesthetic taste alike start from a gift of nature but are matured by practice.³

The practical syllogism. That *phronēsis*, unlike theoretical wisdom (*sophia*), handles particular cases is brought out by the so-called practical syllogism.⁴ In the standard Aristotelian syllogism, as distinct from its medieval derivative, the subject of the minor premise – and so of the conclusion – is a class or species, never an individual. This is because it is an instrument of knowledge, and of individuals there cannot be knowledge but only sensation (pp. 144, 191 above); but the practical (or applied) syllogism, being a directive for action, would be useless if it only ended in generalities. Aristotle alludes to the practical syllogism in a number of places, and gives various examples.⁵ Unfortunately 'it is a notorious fact that hardly two of these examples have the same structure, and in certain cases the dissimilarities are more conspicuous than the similarities'.⁶ They are also in varying degrees improbable.

³ *EN* 1170a11, 1173b29–31.

⁴ *δοκίμιος*. For *δοκίμιος* cf. *ἀρετή* see 1170a11–12.

⁵ *οἱ συλλογισμοὶ τῶν πρακτικῶν*, 1144a31. Yet Hardie (*A.'s Ethical Theory*, 240–3) denies that the name 'practical syllogism' goes back to A. himself.

⁶ See *MA* 701a7–23, *EN* 1146b35–47 27, *De an.* 434a15–21.

⁷ A. Broadie, 'A. on Rational Action', *Phron.* 1974, 71. Naturally therefore it has been much discussed. Apart from general works on A., other fairly recent contributions include Kapp in *Articles on A.* 2, 45f. (orig. 1931); Allan, 'The Practical Syllogism' in *Autour d'A.* (1955); Ando, *A.'s Theory of Practical Principles* (1958), ch. v; R. D. Millo, *A. on Practical Knowledge and Weakness of Will* (1966), ch. 11 B; A. Kenny, 'The Practical Syllogism and Incontinence' (*Phron.* 1966); Broadie, 'The Practical Syllogism' (*Analysis* 1968–9); S. G. Etheridge, 'A.'s Practical Syllogism and Necessity' (*Philologus* 1968); G. Even-Granhoulan, 'Le syllogisme pratique chez A.' (*Les études philos.* 1976); P. Donini, 'Incontinentia e sillogismo pratico' (*R. crit. di storia della filos.* 1977); R. Martin, 'Intuitionism and the Practical Syllogism in A.'s Ethics' (*Apeiron* 1977). Ackrill's bibliography on p. 277 of *A.'s Ethics* goes up to 1968, the Penguin ed. (p. 51) to 1971. For myself, however, I have probably received most enlightenment from an older exposition, that of Grant in his *Ethics* 1, 263–70.

The philosophy of human life

Who for instance would want to start from the premise 'Everything sweet ought to be tasted', or accept the logic of ' "I must make something good; a house is good;" (conclusion) straightway he builds a house?'¹ The minor premise of this syllogism does not even appear to have an individual subject, but Aristotle is emphatic that the conclusion is nothing expressed in words, but the action itself. 'There [*sc.* in scientific thought] the end is the truth contemplated, for when one grasps the two premises, one grasps and understands the conclusion; but in this case the conclusion that results from the two premises becomes the action . . . That the conclusion is the action is evident.' The premises must point to an action that is both good and possible, and there may be several intermediate stages of action before the end is achieved.² This may necessitate, as we have learned elsewhere, a whole train of thought even before the action starts, and the 'practical syllogism' becomes a most complex affair. In this it links up in an interesting way with the procedure of the doctor (himself one who must think in terms of individual cases, 1097a13 and p. 232 above) in tackling a medical problem, and so, not too indirectly, reminds us of the priority of form to matter. From ontology to applied ethics, there are always threads connecting the various manifestations of this many-sided but by no means incoherent mind.

Nevertheless it is difficult not to feel critical of this attempt to squeeze the springs of action into the framework of scientific reasoning. Aristotle seems to have temporarily forgotten his own principle that a *logos* must be adapted to suit its subject, and that no discussion of human action should aim at the precision of formal logic or mathematics.³

¹ A better example would be the syllogism offered by Davidson in *Moral Concepts*, ed. Feinberg, 103: (major premise) 'Any act of mine that results in my knowing the time is desirable'; (minor premise) 'Looking at my watch will result in my knowing the time'; (conclusion) 'Looks at his watch'. A. himself says that in this kind of case the syllogizing is instantaneous and unconscious (*MA* 701a28-32).

² *MA* 701a10-13, 23-25; cf. *EN* 1147a17-28. The idea that actions and not propositions can be inferred from given premises might indeed be (and has been) thought to import 'a peculiar, not to say mysterious, kind of thinking'. To this J. M. Cooper has replied (*Reason and Human Good in A.*, 57) that it is only the inevitable result of the presuppositions of the practical syllogism, the major premise of which expresses the contents of decisions or current appetites. 'Since it is presupposed that the agent has already determined, whether by making a decision or by adopting an end proposed by appetite, to do a certain thing if given the opportunity, he does of course act when he sees the opportunity. What else should he be expected to do?'

³ *EN* 1103b34-04a3 (p. 78 above). Others have felt the same. Cf. Mure, *Arist.*, 148 n. 1.

The practical syllogism

This may have occurred (to hazard a conjecture) because the practical syllogism was introduced, in part at least, as an *argumentum ad hominem*, with the Socratic paradox in mind that no one knowingly does wrong, so that there is no such thing as *akrasia* (incontinence or lack of self-control). In what sense wrongdoing is compatible with knowledge that it is wrong is something that demands further investigation, and the practical syllogism is expressly related both to Socrates and to the problem of incontinence in *EN* 7, chapters 2 and 3.¹

Closely connected with *phronēsis* are choice and deliberation, both rational proceedings. Choice (*proairesis*) 'falls within the sphere of the voluntary', 'a combination of desire with reason'; alternatively, 'a deliberate desire for what is within our power'.² Deliberation too (*bouleusis*) concerns things that we ourselves can do, especially when there is more than one way of attempting them. It is a thought-process undertaken with a view to discovering the best means to a predetermined end. Thus a doctor deliberates about the best means of restoring health, but not about the value of health itself.³ Choice is its outcome, for choice too is concerned with the selection of means, not ends. In Aristotle's ethical vocabulary, ends are what we *wish for*, whereas we *select* (after due deliberation) the best means of accomplishing them

and 211 n. 3: 'It may seem doubtful whether Aristotle was well advised to treat practical thinking syllogistically.' 'The practical syllogism is a hybrid produced by Aristotle's not very successful attempt to assimilate practical thinking to theoretical'; Mjo, *A. on Practical Knowledge*, 53 and 54: 'It is hard to see how the analogy with theoretical reasoning can help him in his attempt to explain how reason can be practical... Actions are not necessitated because they are logically entailed by a set of premises.' Allan in *Autour d'A.* takes a more favourable view.

¹ For Socrates see *EN* 1145 b 25ff. The suggestion occurred to me in reading Allan, *Autour d'A.*, 332 with n. 3, though I do not think he is making it himself. Socrates and the problem of *akrasia* are discussed on pp. 364ff. below.

² *proairesis* is the subject of *EN* 3 ch. 2. For the above see also *MA* 700b 23, *EN* 1113a 11, 39b 4-5. It is *hexis bouleutikē* at 39a 23.

³ On the absence of deliberation about ends, cf. pp. 114f. above. Of course there can be a hierarchy of means to ends. A can be a means to B, which is its end, but which can be none the less a means to a further end C. One may run to reduce weight, and reduce weight for the sake of health. (Cf. the successive steps taken by the doctor, p. 233 above.) One may even regard lightness as a 'constituent part' of health, the end. I doubt, however, if this justifies Cooper (*Reason and Human Good in A.*, 4, 22, 97f. and elsewhere) in maintaining that A. in a way allows for the possibility that ends can be deliberated about, which (as Cooper of course appreciates) he denies *totidem verbis* (*EN* 1113b 3-4 and 1112b 11-12, *βουλευόμεθα δ' οὐ περὶ τῶν τελῶν ἀλλὰ περὶ τῶν πρὸς τὰ τέλη*; again at *Rhet.* 1362a 18-19). The little word *qua* (ᾧ) is an important one for A. Cooper's conception, however, is complex. Note his modification of it on p. 39, and the way it is expressed on pp. 81-2 and 86 ('deliberation selects the action as instrumentally good only').

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(1111b26-27, 13b3-5). The *phronimos* is, in general terms, one capable of deliberating well about what will benefit himself, not just in separate actions but regarding the good life in general (1140a25-31, 41b9-10).¹

Virtue

We should now be ready to approach the famous definition of virtue (*aretē*, distinctively human excellence). It runs as follows (1106b36-07a2):²

Virtue then is a habit of choice, lying in a mean relative to us and determined by reason as the *phronimos* would determine it.

Virtue is, first of all, a settled disposition, a permanent state (*hexis*, Latin *habitus*).³ The performance of a single virtuous act is no guarantee of virtue. The criterion is whether it 'goes against the grain' or is performed willingly and with a certain pleasure. Two passages in particular are relevant.

1144a13-20. Just as certain people, we say, perform just actions without being just (e.g. those who obey the law's behests either unwillingly or through ignorance or some other cause, and not for the sake of the actions themselves),

¹ On the relation between deliberation and the practical syllogism, see now the thoughtful and challenging work of J. M. Cooper, *Reason and Human Good in A.* A major point in this work is that τὸ ἐπαινεῖν (see his Appendix) and τὸ κατ' ἑκαστον, in this context, mean not, as has generally been thought, the individual, but the *infima species*. He may be right, and his arguments must be read, but one criticism suggests itself. In speaking of the objects of sensation (or perception, αἴσθησις), he appears to draw a false antithesis between types and individuals, going so far as to say that according to A. the object of perception 'is never a concrete particular as such, but always a thing of a certain kind' (p. 43 n. 53). In fact the object of perception is both a concrete particular as such and the specific form as instantiated in the particular. Cooper even quotes *An. Post.* 100a17-b1: ἡ δ' αἴσθησις τοῦ καθόλου ἐστίν without the preceding clause καὶ γὰρ αἰσθάνεται μὲν τὸ κατ' ἑκαστον. His conclusion from 87b29-30 is also misleading. A. there says that sense-perception cannot yield knowledge because, even if it is τοιοῦδε καὶ μὴ τοῦδε τινος ('of such and such and not of "this thing here"'), yet at the same time αἰσθάνεσθαι γὰρ ἀναγκαῖον τόδε τε καὶ τοῦ καὶ νῦν ('one must perceive an individual appearing at a certain place and time'). Therefore the universal cannot be perceived by the senses, just because it is not anything individual or 'here and now'. Emphasizing the point he continues (lines 37-39): 'Perception is necessarily of things one by one, whereas knowledge comes from recognition of the universal.' No doubt is left that the object of perception is primarily a concrete particular. (Cf. pp. 183, 191 above.)

² A provisional definition (nominal rather than real, cf. p. 176 above) has occurred at 1106a22: 'The virtue of man must be the condition which makes him a good man and able to discharge his proper function well.'

³ On ἔξις see p. 218 above.

they do what is right and what a good man ought to do, so, it would appear, to be good one must be in a certain state, acting from choice and for the sake of the actions themselves.

1104b3-13. As an indication of states one must take the pleasure or pain which follows on acts. The man who abstains from bodily pleasures and is glad to do so possesses the virtue of temperance, whereas the man who resents the abstention is a reprobate. Moral virtue is concerned with pleasures and pains, for it is pleasure that makes us act badly and pain that prevents us from doing good. Wherefore, as Plato says, one must be trained from childhood to feel pleasure and pain at the appropriate things. That is the right sort of upbringing.¹

It is only by repeatedly performing good acts that we will in the end become good men. 'It is not the character of a virtuous action itself that makes it a genuinely just or temperate one, but the character of the doer, who must act (a) knowingly, (b) from deliberate choice of the action for its own sake, and (c) steadfastly and consistently' (1105a28-33). In matters of conduct Aristotle has a proper contempt for arm-chair theorists. Only by doing good, he says, do we become good.

1105b9-18. Most men do not act on this. They take refuge in theory,² fancy themselves as philosophers and expect in this way to become good, like patients who listen carefully to what the doctor says but carry out none of his instructions. As those will not achieve health of body, neither will these 'philosophers' achieve health of soul.

Next, virtue lies in following a middle way between two extremes. In essence it is a mean, though in point of value a climax or summit. The avoidance of excess and defect and preservation of due measure as a guarantee of goodness was an idea shared by Aristotle with Plato: 'shared with' rather than 'owed to' Plato, for both of them were giving

¹ Cf. Plato, *Laws* 653 a ff., and for the supreme importance of pleasure and pain, 'the strings by which we human puppets dangle', 636 d and 732 e.

² εἰς τὸν λόγον καταφεύγοντες. At *Phaedo* 99 e Plato's Socrates describes himself as εἰς τοὺς λόγους καταφεύγωντα in his search for truth. Can the resemblance be accidental? Another passage that seems to be aimed at is *Rep.* 619 c, where the man who, at the choice of lives in the next world, opts for a powerful tyranny, overlooking in his greedy haste, that the life chosen also includes unspeakable horrors like eating his own children, is described as one who in his previous earthly existence 'had lived in a well-ordered city and acquired virtue through habit rather than philosophy' - just the way in which, according to A. here, steadfast moral virtue *should* be acquired.

The philosophy of human life

philosophical form to a typically Greek idea,¹ enshrined in the Delphic injunction 'Nothing too much', and reflected in Pythagorean philosophy, the tragedians² and elsewhere. This emphasis on the value of moderation and the danger of excess is perhaps the most valuable legacy of Greek ethical thought, whether in popular lore or philosophical theory. In Plato it is most prominent in the late dialogues *Politicus*, *Philebus* and *Laws*.³ It was Plato who introduced the distinction, adopted by Aristotle, between two sorts of measurement, mathematical, relating quantities, e.g. 6 as the arithmetical mean between 2 and 10, and axiological, by the standard of what is moderate, fitting, opportune or necessary.⁴ Aristotle calls it 'the mean relative to us' in the sphere of emotions and actions which is the province of virtue. The Pythagoreans assigned rightness to limit and wrongness to the unlimited because there are an infinite number of ways of going wrong but only one of being right.

'Relative to us' has a further significance. To hit on the golden mean⁵ is hard, so virtue is a rare and noble thing, and most of us must be content with the next best, to reduce our faults to the minimum. The secret is to lean always towards the extreme which is (a) less distant from the mean, for one extreme is always less faulty than the other, e.g. foolhardiness is nearer true courage than cowardice is; and (b) the less congenial to our individual nature, as judged by the pleasure or dislike that it arouses in us. This will bring us as near as possible to the mean, as bent sticks are straightened by being bent in the

¹ Düring (*Arist.*, 448) writes as if Plato's influence were incompatible with an origin in popular ideals, but were not those behind them both? He is influenced by Krüger, who has 'convincingly proved' that A.'s starting-point is Plato's (unwritten) 'Prinzipienlehre'. His further comment remains interesting. 'A. was not the first to discover the principle of the right measure nor to apply this principle to ethical phenomena. He took it over from Plato and built his own doctrine on it while renouncing Plato's ontology. The doctrine of the mean, correctly conceived as a method of giving a phenomenological description of virtue and vice, is Aristotle's own achievement.' For Plato's influence he refers to Stewart (*Ethics* 1, 196), who rightly remarks that Plato's word μέτρον is a better one than A.'s μέτρον. A. uses μέτρον occasionally. At *Pol.* 1295b4 it is coupled with μέτρον, at *EN* 1107a7 with ὡς δεῖ and at *Rhet.* 1390b9 with ὁπποῦν.

² Soph. *O.C.* 1211-14 and Eur. *Medea* 125-28 both sing the praises of τὸ μέτρον.

³ See *Pol.* 284a-b and vol. v, index s.vv. measure, metron. A number of references in the *Laws* are collected on p. 376, n. 1.

⁴ Plato, *Pol.* 284c; in A., *EN* 1106a26ff. The irrelevance of purely numerical ratios to values is illustrated at *Met.* 1092b26 (vol. v, 277).

⁵ Horace's metaphor for A.'s μέτρον τε καὶ ὁπποῦν.

opposite direction. Thus naturally timid people should force themselves to face dangers and so overcome their timidity. It sounds an austere regime, but 'in everything we must be on our guard against pleasure, for we do not judge it impartially'.

To expand and make clearer what he intends by the doctrine of the mean, Aristotle writes (1106b18-24):

Moral virtue has to do with emotions and actions, in which there is excess, defect and the mean. For instance fear, confidence, desire, anger, pity, pleasure and pain in general may be too much or too little, neither of which is good; but to feel them at the right time, on the right grounds, towards the right people, with the right motives and in the right way¹ – that is what is meant by the mean and the best, which is the mark of virtue. Actions also display excess, defect and mean.

Evidently Aristotle included in his notion of a mean or middle course considerably more than would occur to most people. However, not all actions and emotions allow of a mean: some are just wrong *per se*. For instance, says Aristotle gravely, morality does not direct with what woman, when and how one should commit adultery.² To do it at all is simply wrong. Of the passions this applies, e.g., to malice, shamelessness and envy.

Lastly, the virtuous state is determined by reason as the *phronimos* would determine it. There can be no separation between moral and intellectual virtues. As we have seen (pp. 348f. above), one cannot be *phronimos* without being good nor good without *phronēsis* (1141b31-32). It can be pertinently objected that once one has deserted the mathematical concept of a mean, the doctrine is of little practical value.

¹ Literally 'unbribed', 1109b7-9. Cf. 1113a32-b2: 'Perhaps the good man stands out from the rest because he sees the truth in individual cases, being as it were the standard and measure of them. The error of the majority comes, it would seem, from pleasure, which appears to be something good though it is not. They therefore choose the pleasant as good and shun pain as bad.'

² Cf. 1109a28-29, and the parallel between justice and medicine at 1139a14-19, which must surely owe something to Plato, *Phdr.* 248a-c.

³ (A. evidently possessed the lecturer's art of holding his audience by occasionally raising a smile.) Barnes (Penguin edn, *Ethics*, 23) gives as a point prudently ignored by moralizers that if A.'s doctrine urges us not to drink too much wine, it equally urges us not to drink too little. But if A. had been a propagandist for total abstinence (which he was not; see 1154a15-18) it would not have contravened his doctrine to put wine-drinking in the same class as adultery. One is irresistibly reminded of the story, well known in academic circles, of the self-righteously teetotal guest at an Oxford college, who when offered wine by the Provost, drew himself up and replied: 'I would rather commit adultery?' (to which the Provost's reply is said to have been 'So would we all, my dear fellow, so would we all').

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Even when extended as Aristotle extended it (at the right time, for the right motive, and the rest), it amounts to little more than 'act as you should act', and such a sentence cannot give moral advice.¹ Now to begin with, it is no easy task for anyone to base a practical ethic on firmly-established standards without the aid of either a metaphysical background like Plato's or the sanctions of religion. Aristotle admits freely that few are capable of acquiring genuine as distinct from 'natural' or potential virtue; 'the many' must be brought to see the advantages of good behaviour through parental training, public opinion, legal sanctions and the like. But that there *are* standards he has no doubt at all, and what sustains him is the faith that since all men have the gift of reason, though many may misuse it some will cultivate it to the point of acquiring *phronēsis*, the ability to tell right from wrong in particular cases, which he likened to perception (thus bringing it close to *nous*, 1143b 5). It is a kind of sixth sense, a moral eye or ear, and in a passage in the *Politics* which owes something to Plato he says that its possessors are marked out for government in their cities.

Phronēsis is the only virtue special to the governors. The others, it would seem, must be common to governors and governed, but the virtue of the governed is not knowledge but true opinion. The man under government is like a flutemaker, whereas the governor resembles the musician who uses it.²

In Plato's *Republic*, knowledge was the preserve of the arduously trained philosopher-rulers, and the auxiliaries lived by true opinion. The difference was one of object, changeless Forms or the changing world. For Aristotle *phronēsis* would differ from true opinion by its grasp of the reason as well as the fact.

He proceeds to discuss the separate virtues and vices, and the question arises how far he regarded virtue as a unity, as Plato did and as his own

¹ See Barnes, *Penguin Ethics*, 25.

² *Pol.* 1277b 25-30. (For the flutemaker see Plato *Rep.* 601d-e.) The context, however, should be noted. A. has just said that political rule (defined as rule over free men) is learned by first obeying: 'It is a good saying that one cannot rule well if one has not been subjected to rule. Each demands a different virtue, but the good citizen must understand and be capable of both. That is the virtue of a citizen, to know from both sides the government of free men' (1277b 7-16). There is no mention of this in the *Ethics*, and we are left in some uncertainty. It sounds like a description of the theoretical basis of Greek democracy, but in the *Ethics* A. is far from suggesting that every citizen of a *polis* is capable of exercising *phronēsis*.

Virtue

definition of it might seem to indicate. In one way he did, namely that the single virtue of the mind ensures possession of all the others.

1144b32-45a2. In this way may be resolved the dialectical argument that the virtues are separate from each other, on the ground that the same man is not equally well endowed by nature with all the virtues, but will have acquired one when he has not acquired another. This may be true of the natural virtues, but not of those by which a man is called good without qualification. If *phronēsis* is present, all are present.

With the distinction available between single acts and the settled disposition, 'natural' and 'perfected' virtue, the same man's *actions* may without contradiction be brave but unjust, licentious but generous, and the claim takes on a less paradoxical look than it had in Plato. It was a cardinal principle with Aristotle that whereas a generic definition is always possible, a specific one is more useful and informative, and he would say of virtue as he said of the soul, 'If you want a general definition here it is, but the most pertinent procedure is to describe each of its manifestations separately.'¹ In practical matters this is true *a fortiori*, and book 2 ch. 7, where he makes the transition from 'virtue' to 'the virtues', begins with the characteristic reminder: 'But to make this general statement is not enough. We must apply it to particular instances, for in treating of conduct, though universal statements cover a wider field, the particular are nearer the truth. Actions are concerned with individual cases, and our accounts must accord with this.' It was in this sense that he agreed with Gorgias on the advantage of taking the virtues one by one rather than resting content with vague general descriptions of virtue such as 'well-being of the soul', 'right conduct' or the like (*Pol.* 1260a25-28, p. 341 above).

The virtues (1)

Aristotle refers his listeners to a 'table' or 'diagram',² from which he summarizes a series of virtuous middles and the corresponding extremes in relation to different kinds of actions and passions, pointing out that not all of them have names. In attitudes to pleasures and pains, for

¹ *De an.* 412b4-5, 415a12-13. See pp. 283f. above.

² Σικγρρρρρ 1107a33, an interesting reminder that the work was planned for the lecture-room. The table is reconstructed in the Penguin trans., p. 104.

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instance, the virtuous mean is temperance, excessive surrender to pleasure is licentiousness, insufficient appreciation of it is rare and lacks a name. Aristotle himself suggests 'insensibility'. In giving of money the trio is generosity – prodigality – meanness, in attitude to danger courage – foolhardiness – cowardice. In anger too the same pattern appears, though its components can scarcely be said to have names; but we may call the mean good temper, the excess irascibility, and the defect lack of spirit.¹ So the list goes on. Returning later to the subject, he devotes over a quarter of the whole work² to a full discussion of each in turn. Before that, however, he interposes a section on the question of voluntary and involuntary action and whether it is in our power to be good or bad.³ Since this belongs naturally to the nature of virtue in general, we may follow his example.

The voluntary and involuntary

(i) *Virtue concerned with ends or means?* In book 3 ch. 7 Aristotle attacks the Socratic paradox that no one is voluntarily wicked. His approach is to show first that virtue and virtuous practices are in our own power (*ἐφ' ἡμῖν*) and voluntary (*ἐκούσια*) and then to argue that if this is so wickedness must be voluntary too (1113b6–7). To make the point about virtue he says something very strange.⁴ He first repeats (1113b3ff.) that our ends are the objects of wish, but the means to them are the concern of deliberation and choice, wherefore actions concerned with means are done by choice and so voluntarily. This is familiar ground, but he continues: 'Now the exercise of the virtues is concerned with these [i.e. with means], so virtue is in our power, and so is vice.' Virtue (its realizations or manifestations, *energeiai*) concerned with means? What of a passage like that in book 6, 1144a7–9: 'Virtue makes the aim right, *phronēsis* the means'? Or 1144a20–22: 'Virtue makes the choice right, but to carry out the actions naturally subvenient to it belongs not to virtue but to some other faculty.' 'Activities

¹ So the Penguin version for *ἀσπνσία*. Ross invents 'irascibility'.

² Approximately 2½ books, from bk 3 ch. 5 to the end of bk 5 (1115a4–38b14).

³ It is in these first few chapters of bk 3 that he investigates the concepts of choice, deliberation and wish, which have already been touched on here.

⁴ So at least I find it, but as other commentators seem little worried my judgement may be astray.

The voluntary and involuntary

of the virtues¹ are precisely what Aristotle sees elsewhere as constituting the final goal of human life, the human good or happiness. Formally, he has certainly contradicted himself, and perhaps in substance too. This may be one of the signs that the *Ethics* is an unrevised course (or several courses) of lectures, a loose end that he has not tied up. On the other hand, the anomaly could possibly be (like others we have seen) one of language rather than content, an obscure application of his doctrine that whereas one must have the faculty and organ of sight before seeing, one can perform virtuous acts without having acquired the virtuous state or habit, that it is indeed by performing such acts that one *acquires* the habit. These habit-forming acts might be described as 'activities of [or 'according to'] the virtues' without being the *outcome* of the virtuous state. If so, however, in view of the significance of 'activities according to virtue' elsewhere, Aristotle is showing scant consideration for his readers, whom he has taught to regard *energeia* as the end and climax of any process of development, only possible after a potentiality has achieved the mature state (*hexis*) or form.

(ii) *Socrates*. Aristotle's whole discussion of voluntary and involuntary action is avowedly an attempt to come to terms with the Socratic and Platonic dictum that virtue is knowledge and ignorance the whole cause of wrongdoing. This inevitably gives direction to his own account, and there is also a historic interest in seeing Socrates through Aristotle's eyes. This, however, has been done in some detail in vol. III, of which the reader may care to refresh his memory.² In view, however, of the present relevance of the topic, I repeat here a paragraph from that volume.

Aristotle's chief objection to the doctrine is that which would occur to most people, namely that it makes no allowance for weakness of will, lack of self-control, 'incontinence', the effect of appetite or passion. In book 7 of the

¹ *αὐτὸν ἀπὸ τοῦ ἐνέργειαι*, 1113b5-6. One can scarcely escape the difficulty with Burnet (*ed. loc.*) by slipping without explanation from the translation 'activities of goodness' to the mistranslation 'activities which produce goodness', even if the solution lies somewhere along these lines. For *αὐτὸν ἀπὸ τοῦ ἐνέργειαι* as constituting the human good, or *εὐδαιμονία*, see 1098a16-17, 1100b9-10, 1177a10. 'Εὐδαιμονία itself is 'an activity of the soul according to virtue' (1177a12, cf. 102a17-18).

² Vol. III, ch. XIV, 1 and 7 ('Virtue is knowledge' and 'Voluntary and involuntary'), pp. 450-61 = *Socrates* (paperback ed.), 130-42.

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Ethics (EN 1145b25) he makes it the starting-point of his own discussion of the right use of these terms, and once again begins with a reference to the *Protagoras*, where the question was raised (at 352b-c) whether knowledge when it is present, can be 'hauled around like a slave by the passions'. 'Socrates', he continues, 'was totally opposed to this idea, on the ground that there is no such thing as incontinence; when a man acts contrary to what is best, he does not judge it to be so, but acts in ignorance.' So put, says Aristotle bluntly, the doctrine is in plain contradiction to experience;¹ and most of us have to agree with Medea (as Euripides and Ovid depict her) that it is possible to see and approve the better course but follow the worse. Aristotle's own solution cast in a form to deal most gently with the paradox, is reached through his more advanced technique of analysis. A crude dichotomy between knowledge and ignorance is not enough. Knowledge can be actual or potential (i.e. acquired but not consciously present, as in sleep or drunkenness), universal or particular. After considerable discussion (not relevant here), he concludes that the wrongdoer may know the universal rule, but this is not the efficient cause of a particular action, which is motivated by particular knowledge (i.e. that this present action, in my individual circumstances, is or is not contrary to the rule and therefore wrong). It is this kind of knowledge which is overcome (banished from consciousness, rendered merely potential) by the temptation of pleasure, fear, etc.; but such immediate awareness of particulars is a matter of sense-perception only, and ought not, according to Aristotle's epistemology, to be called knowledge. Thus by the application of Aristotelian distinctions of which Socrates never dreamed, something of his paradox can be saved: 'Because the last term (i.e. the particular) is not a universal nor equally an object of knowledge with the universal, even what Socrates sought to establish seems to come about; for there is no incontinence when knowledge in the full sense is present, nor is it that knowledge which is "hauled about" by passion, but perceptual knowledge.'² (1147b14.)

(iii) *Aristotle's exposition.*³ At the beginning of EN 3, Aristotle raises the subject with his usual insistence on the practical:

Virtue is concerned with actions submitted to⁴ or performed. When these

¹ Or 'to common belief'. See p. 365 n. 2 below.

² Vol. v, 453f., *Socrates*, 133f.

³ Two recent treatments are those of Siegler in *Monist* 1968 and Furley in *Articles on A.* 2 (extracted from his book *Two Studies in the Greek Atomists*, 1967). Siegler's is mainly critical (perhaps occasionally hypercritical).

⁴ Usually translated 'emotions' (e.g. Siegler), 'feelings' (Furley, Penguin trans.) or 'passions' (Oxford trans.). *πάθος* of course frequently has this meaning, but when contrasted, as here, with *πράξις* is (I suggest) more likely to mean what is done to one as opposed to what one does. Cf. 1110a2-3 *ὁ πάττω καὶ ὁ πάσχω*, in the context of a man blown off course or kidnapped.

The voluntary and involuntary

are voluntary, they earn praise or blame, but when involuntary, pardon and sometimes even pity. Hence it would appear necessary for students of virtue to define the voluntary and the involuntary, and also useful to legislators in assessing honours and punishments.

There is nothing in Aristotle of the philosophical debate between free will and determinism,¹ which appears to have made its first entry with the Epicureans. Aristotle, like most of us, took it for granted that we do, or put up with, some things because we want or have decided to, and others because external circumstances compel us. To think otherwise would be to deny the gifts of *phronēsis*, deliberation and considered choice, which are our heritage as rational beings and our link with the divine. His interest lay rather in discovering by what criteria we call one action voluntary and another involuntary, and so to settle the question of *responsibility* for our actions, which has practical consequences. For example, if in a storm a captain orders a valuable cargo to be jettisoned to save his ship and the lives of its crew, is his action voluntary? He would not have chosen it in other circumstances, but to give the order or not was a question for his own judgement. The decision was in a sense his, in a sense forced on him.

The analysis which follows is somewhat pedestrian and unexciting, mainly because Aristotle sticks so manfully to his principle that morality is a matter not of theory or generalizations but of individual acts or events. Involuntary acts are those performed (or submitted to) (a) under compulsion or (b) in ignorance. (a) 'Compulsion' is applicable to cases where the impulse or cause (*archē*) is external and the doer or sufferer contributes nothing, e.g. when a man is carried away at sea by winds, or kidnapped. Cases like that of jettisoning cargo, or doing something wrong at the bidding of a tyrant who will if thwarted kill one's parents or children, are debatable, but incline more to the voluntary, and so to liability to praise or blame. Lawyers might have a field-day if the owners of the cargo sued the captain for misjudgement. Their

¹ Unless one counts as partial support for determinism the argument about what journalists like to call 'compulsive' enjoyments or good causes, stated at 1110b9ff. and briefly refuted by the definition of compulsion as a wholly external force to which the subject contributes nothing. Even a determinist would presumably admit the usefulness of recognizing a distinction in kind between leaving the house to post a letter and leaving it because thrown out physically by an irate father.

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case would be helped if the judge accepted the rule here formulated by Aristotle, that the terms 'voluntary' and 'involuntary' should be used with reference to the moment of action (1110a13-14). Then the act is voluntary (the moving cause is in the doer himself), even though if considered *simpliciter* (ἀπλῶς), or in the abstract, no one would choose to do it. Nevertheless, he concedes, it remains difficult sometimes to decide what is to be chosen or endured in exchange for what, and still more difficult to abide by one's decisions, for in most cases such mixed actions either have unpleasant consequences or are immoral. No general advice can be given, for circumstances alter cases, and in the world of action one is always dealing with individual cases.

(b) Under this head two distinctions are made. (i) Acts done in ignorance may be divided into involuntary and non-voluntary. A man cannot be said to have acted unwillingly¹ if when he realizes what he has done he has no reason to be sorry.² Only where there is regret or repentance can the word be properly applied. (ii) One may act either *in* ignorance or *because* of it. If a drunk man commits a crime without realizing what he is doing, the cause of his behaviour is not his ignorance but his drunkenness, and for this he is responsible. Pittacus, indeed, not only refused to remit the penalty for a crime committed in drunkenness, but doubled it.³ The relevant ignorance, like compulsion, is not of a universal principle but of particulars, e.g. of whom one is killing (as with Merope, or Sohrab), of the effect of a drug administered with therapeutic intent, or the fact that a revolver was loaded.⁴

Returning to the subject in ch. 5, Aristotle claims that his remarks are in line with common practice both in private life and in legislation. Vengeance or punishment is exacted for wicked deeds unless done either

¹ The Greek ἀκούσιως, usually translated, as here, 'involuntarily', means more strictly 'unwillingly', 'against one's will'.

² EN 1110b 20-24. At MA 703b 3-11, in a more physiological context, he offers as examples of the 'non-voluntary' sleeping, waking and breathing.

³ For Pittacus, the 6th century tyrant of Mytilene, as the author of this law (not named here), see Pol. 1274b 18-23, Rhet. 1402b 9-12.

⁴ Not A.'s example obviously, but very close to it. 'Wanting to demonstrate it, he let it go off, like the man with the catapult' (1111a 10-11); 'thought his spear had a button on it' (1110a 10-13). As for drugs, one has only to think of the thalidomide tragedy of the 1960s. It is sad that harmful side-effects of drugs are now so common that they have their own (Greek) name in the medical dictionary, being known as 'iatrogenic' troubles. 'Iatrogenics', I am told, has become a recognized branch of medical study.

The voluntary and involuntary

under compulsion or through ignorance for which the doer is not responsible, and honour similarly paid to noble deeds, as if to deter the one and encourage the other (1113b22-26). If the excuse be ventured that to get drunk or otherwise lose control is just 'in somebody's nature' and he cannot help it, Aristotle replies that we are responsible for the sort of people we are. A thoughtless character, like a virtuous one, is moulded by habits which we could have chosen to form or not. 'It is stupid not to recognize that states of character are the product of individual actions.'¹ True, the man may be unable to help himself *now*, when his character is set and hardened, but he is responsible for his condition as much as a man who has become ill through loose living and refusal to act on medical advice. Vice and virtue – both are 'in our power'.

Clearly no one who hoped to have his sentence reduced on grounds of diminished responsibility would get very far with Aristotle. It is odd that in the above remarks he should so neglect the influence of education and environment, for we have seen him emphasizing the importance of good upbringing from childhood (p. 353), and this it is hardly in every child's power to secure. On this subject he seems a little unsure of himself. Legislators too had a part to play, for laws make men good by accustoming them to good behaviour, and how far they achieve this is a test of the merits of a political system (1103b2-6). In another context we are told that our different natures are not under our control.

1179b20-31. Some believe we are made good by nature, others by habit and others by teaching.² Now nature's part is obviously not under our control, but comes by some divine agency to the truly fortunate; and argument and teaching are not effective in all cases. The soul of the pupil must be cultivated beforehand through habits, like soil which is to nourish the seed;³ for one who lives by his passions would neither listen to a dissuading argument nor understand it if he did. How can one reform anyone in that state? In general passion seems to yield not to argument but to force. A character disposed to virtue must already be there, loving good and hating evil.

¹ 1114a3-17. Cf. pp. 352f. above.

² Cf. the opening of Plato's *Meno*. A.'s concern here with the way in which virtue is acquired is closely bound up with contemporary debate.

³ The first appearance of this cliché of the school speech-day? Editors quote an example from the Hippocratic *Nomas*.

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Laws, he goes on, continue to be necessary throughout a man's life, for most men yield to compulsion rather than noble ideals. This does not affect the truth that virtue is 'in our power' in the sense that 'natural' virtue, an innate capacity to become virtuous, is to some degree present in all men from birth,¹ though virtue, the completed state, is not. Since this is realized through good habits,

None of the moral virtues comes to us by nature, for nothing that owes its being to nature can be changed through habit, e.g. the stone whose nature it is to fall cannot be trained by habit to rise, not if one were to accustom it thereto by throwing it in the air ten thousand times, nor fire to fall . . . Neither by nature then nor contrary to nature are the virtues implanted in us. Rather we are naturally adapted to acquire them but what matures them in us is habit (1103a 19-26).²

If Aristotle in fact wavered in these matters, this was partly due to his oft-repeated resolve to be practical rather than aim at a tidy theory remote from the problems and anomalies of everyday life, and partly to a tension in his own character. His psychological and biological studies, allied to his ingrained intellectualism, had convinced him of the superiority of man as such – a rational being – to the lower animals; but at the same time, as an intellectual and moral aristocrat he could not help observing that the standards of many of his fellow-men fell woefully short of the moral sense to be expected from creatures so endowed; indeed, at their worst, well below those of the beasts.

*Incontinence, self-control and temperance*³

Closely connected with voluntary and involuntary action is the fault of *akrasia*, usually translated 'incontinence'. The word means 'lack of mastery', i.e. *self-mastery*, and once more the starting-point is Socrates,

¹ εὐδαιμονία καὶ γαμετήρ. 1144b6. This comes from our possession of reason, but the position of lower animals is a little ambiguous. The passage just quoted goes on to say that children and animals have the natural disposition towards virtue without the *nous* to bring it to maturity, but a little later (1145a 25-26) states bluntly that animals have neither vices nor virtues. To say that they have is to speak in metaphor (1149b 21-32; cf. 1116b 20ff.), referring presumably to virtues in the developed state which demands *phronēsis*. But without even the possibility of *phronēsis* (unlike children), how can they be said to have the natural capacities?

² Latter part already translated on p. 344.

³ For a recent (1969) explanation of incontinence, with animadversions on some others, see D. Davidson, 'How is weakness of the will possible?' in *Moral Concepts*, ed. Feinberg, 93-113. R. Robinson has an article 'A. on Akrasia' in *Articles on A.* 2. Whole communities are liable to it no less than individuals (*Pol.* 1310a 18-19).

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whose teaching forces us to ask whether such a state is possible, and if so, how it is to be explained.¹ So we start with a reminder of the *Protagoras*.

1145b21-29. Some deny that one can be knowingly incontinent. As Socrates thought, it would be a dreadful thing if where knowledge was present something else dominated and dragged it about like a slave (*Prot.* 352b-c). Socrates was wholly opposed to the idea: there was no such thing as incontinence, for no one wittingly acts otherwise than for the best, but only through ignorance. Now to say this is in glaring contradiction to accepted opinion,² and we must enquire into what happens, and, if the cause is ignorance, what manner of ignorance.

He begins by re-stating his method, as adapted to ethical enquiry: first set down the current beliefs on a subject, then state as clearly as possible the questions or difficulties (*aporiai*) which arise, next confirm current opinions as far as possible, or at least the most widely held and authoritative; for if the difficulties are resolved and received opinions survive, that will be sufficient demonstration.³ Most of this describes his general philosophical method,⁴ but in philosophical as opposed to practical questions he would hardly rest satisfied with the standard of demonstration permitted here.

After stating (a) his method, (b) the 'things said', which do not all agree, and (c) the *aporiai*, Aristotle comes to (d) his own solution. Knowledge may be present either actually or only potentially, as when one knows the premises of a practical syllogism in universal form but not their relevance to one's own particular case, lacking that acquaintance analogous to sensation (1147a26) which alone stimulates to action. Alternatively the knowledge may be dormant like that of Plato's literate and numerate man who is neither reading nor counting.⁴ Madness and drunkenness induce this state, as do passions like anger or

¹ Cf. bk 8, 1168b34-35 καὶ ἐγκρατής δὲ καὶ ἀκρατής λέγεται τῷ κρατεῖν τὸν νοῦν ἢ μή, ὡς τοῦτου ἑκάστου ὄντος.

² 1145b2-7. The context makes it pretty certain that τὰ φαινόμενα here and at line 28 does not mean 'the facts' or 'the evidence', as it has often been translated, but 'what appears to men', received opinions. Stewart (II, 128) equated it with εὐδοξία four lines below, and the same has been argued by Owen (*Articles on A.* I, 114f.). In carrying out his own programme A. calls what he has been discussing τὰ λεγόμενα.

³ Cf. pp. 90-2 above. Bks A and B of the *Metaphysics* form a good example of the method at work.

⁴ 1146b31-33; cf. Plato, *The.* 198e-99a.

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lust. Again, one universal may clash with another, e.g. 'to do x is wrong' with 'to do x is pleasant'. Then if the action in question is an instance of x and desire is exerting a strong pull, only the rule 'one should do what is pleasant' is remembered and applied.¹ Having made these points Aristotle returns to Socrates (1147b13-17): what he postulated does occur, in the sense that no one acts incontinently when knowledge in the strict sense is present. It is not genuine knowledge that is 'dragged about like a slave', for knowledge is of the universal,² whereas the emotional influence that leads to incontinence allows only a sensual awareness of the here and now which is the trigger of action.

Aristotle does his best for Socrates, but his own view, based on psychology, appears most clearly in book 1 (1102b13-28). The division of the soul into a rational and a completely irrational³ part does not exhaust its variations. There is also an irrational element which yet in some way shares in the rational, namely desire. Both the self-controlled and the incontinent man possess reason urging them aright and to the best ends, but something else too⁴ which resists reason, like a paralysed limb which moves in the opposite direction to that intended. Its partial rationality appears from the fact that in the continent man it is obedient to reason, and in the truly virtuous man, though still present, it agrees with reason in all respects.

The opposite of *akrasia* is *enkrateia*, being in command or control of oneself. Its possessor is one who 'knowing that his desires are bad, is prevented from following them by his reason' (1145b13-14; cf. *De an.* 433a7-8). He is said to have 'strong and bad desires' (1146a9-10), which is presumably why *enkrateia* is 'not a virtue but a mixed state' (1128b33-34). It sounds a surprising thing to say of self-control that the man who overcomes strong temptations is less virtuous than one who has no bad desires to contend with, but it is only consistent with the Aristotelian definition of virtue as a habitual tendency towards

¹ A.'s account here is, as Ackrill says, 'not entirely clear', but Ackrill's own exposition of it may be recommended as a model of clarity.

² For knowledge being only of the universal, see pp. 144f., 191 above.

³ The nutritive (1102b11), for which cf. 1102a32 and p. 285 above.

⁴ 'In what sense it is separate makes no difference', says A. (1102b25), reminding us once again that this is no scientific work of psychology, and that in *ethics* the practical result is all that matters.

Incontinence, self-control and temperance

right which makes it at the same time enjoyable (p. 353 above).¹ The virtue in this field of pleasures and desires is, then, not self-control but *sōphrosynē*, usually rendered by 'temperance', a 'mean concerning pleasures' (1117b 24ff.) which 'in all things speaks with the same voice as reason' (1102b 28). Only the *sōphrōn*, it would seem, has the *phronēsis* requisite for virtue.² The opposing vice is not *akrasia* (cf. 1151a 5-6) but *akolasia*, which may be rendered 'licentiousness' and is defined as 'excess with regard to pleasures'.³ The opposite vice of defectiveness in this regard is, Aristotle admits, rare, indeed scarcely human, and has no name, but may be called insensibility (*ἀνασθησις*), and temperance is the virtue between this and licentiousness. Self-control and its opposite now lie in a sort of secondary mean, between the virtue of temperance and the vice of licentiousness. Self-control is something *good*,⁴ and Aristotle's refusal to give it the name of virtue serves only the interests of his antecedent scheme of means and extremes and betrays the artificiality of applying it as a universal criterion. Yet he can find extremes when he wants them. Truthfulness can scarcely be denied the status of a virtue, but between what extremes is it a mean? Is not lying the only relevant vice? Aristotle is undeterred. Truthfulness is a mean between boastfulness on the one hand and mock-modesty⁵ on the other, which seems to limit its field somewhat drastically.⁶ *Aidōs*,

¹ Courage would seem to be a parallel case, but although A. does call the man who has the virtue of courage 'fearless' (1115a 16, 31, b 1), he also says that he faces dangers though he fears them like other men, but only as and when, and in face of what dangers, it is right to do so (1115b 10ff.). Courage is even painful, for an active facing of unpleasantness is more painful than the mere abstention from pleasure. What makes it pleasant (as all genuinely virtuous acts must be; see 1104b 3ff., p. 353 above) is the goal, the honour which may follow and in any case the consciousness of having acted nobly (1117a 32-b 15). Since the pleasure is not in the action itself (οὐτὶς τοῦτο χαίρων, 1104b 6), this hardly seems fair argument.

² Cf. the etymology suggested at 1140b 11-12: We call it by this name, ὡς σόφουσαν τὴν φρόνησιν.

³ So 1118b 27-28. But the conscientious A. has felt bound to state that this does not apply to all pleasures, or even to all pleasures of the senses. We do not for instance, he points out, call a man who takes extravagant pleasure in seeing fine colours or listening to music licentious or profligate (1118a 11ff.). They are among the pleasures that Plato called 'true' or 'pure' (*Phil.* 51b ff.). The pleasure of touch and taste on the other hand are 'slavish and bestial', but once again A.'s conscience smites him; he must make an exception of those who employ taste in the ordinary course of their avocation, like wine-tasters and chefs!

⁴ σπουδαίον, 1151b 28. This passage also should be consulted on the relations between ἀνασθησις, ἀσωπρόσυνη, ἐγκράτεια, ἀκρασία and ἀκολασία.

⁵ The εἰρωνία attributed to Socrates, who is mentioned by name at 1127b 25. A. admits that those who display it are more attractive characters than the boastful, and that they do so not for gain but from a desire to avoid pomposity.

⁶ 1108a 20-23. The fuller account of truthfulness comes at 1127a 33-b 32.

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generally regarded as a typically Greek virtue,¹ offers another example of arbitrary exclusion.² Was it not sent to men by Zeus together with justice 'to bring order into cities and create bonds of friendship and union'? (Plato *Prot.* 322c.) But for Aristotle it is not a virtue even though it is a mean (between shamelessness and shyness or nervousness), but classed with the emotions or passions. To achieve this result Aristotle has to equate it with shame (*αἰσχύνη*), not in its good sense of modesty but in the sense of being ashamed of some disgraceful action. This was certainly not the prevailing sense of *aidōs* in his time.

The virtues (2)

Scholars and philosophers who speak, justly enough, of Aristotle's as one of the few great ethical systems are apt to pass over the extent to which it was also a product of its time and place. The questions asked and the direction of the enquiry were often determined for him by his predecessors and contemporaries, especially of course Socrates and Plato, and more generally by their setting in the social and political life of fourth-century Greece, since as we know, he held that the good was the same for an individual as for a *polis*. This means that some problems to which he devotes considerable attention in the *Ethics* and *Politics* have not the same interest or urgency for us as they had for him. The shadow of the *Republic* looms especially over the sections devoted to deciding whether, and in what sense, virtue is one or many, and whether justice is a virtue or the whole of virtue. A second gap appears between us in the meticulous care with which he determines the meanings of various Greek words, either explaining or amending current usage. Some of these have no exact English equivalent and lose much of their content when divorced from their associations with the thought and language of ordinary Greeks. Reading the *Ethics* one sometimes has the impression of taking a lesson in Greek lexicography rather than in moral philosophy. This has its own fascination, but although an accurate and agreed use of terms is vital to philosophical

¹ Among the English equivalents offered by *LSJ* are reverence, awe, respect for the feelings of others or for one's own conscience, sense of honour.

² αἰδώς ἀρετὴ μὲν οὐκ ἔστιν, 1108a32. Cf. 1128b10, the beginning of the full discussion of αἰδώς. But common sense reasserts itself momentarily at 1116a27-28: courage displayed in a citizen-army is δῆ' ἀρετὴν because it is δῆ' αἰδῶ καὶ διὰ καλοῦ δρᾶν.

The virtues: magnanimity

discussion, I doubt if even Socrates and Plato, with their insistence on definitions,¹ or a modern upholder of the intimate connexion between philosophy and language, would insist on our following into detail the shades of meaning in the Greek words which we translate as liberality and prodigality, over-ambition and proper ambition, buffoonery, wit and boorishness, and so on.

For these reasons it would hardly be profitable to go into each of the separate virtues in detail. One or two – temperance, courage – we have already looked at. Besides these, I take two more, ‘magnanimity’ and justice, the former for the light it throws on Aristotle’s own character and the latter for its intrinsic importance both in his time and now.

Magnanimity (book 4, 1123a24–b35).³ In the magnanimous character we have, short of the philosopher, Aristotle’s ideal. We might say the ideal citizen. ‘The magnanimous man, since he has the highest deserts, must be the best; for the better man is worthy of the greater meed, and the best of the greatest’; and magnanimity is ‘an adornment to the virtues, for it enhances them, and is not found without them.’ The paragon who exemplifies this super-virtue is defined as ‘one who thinks himself worthy of great things and *is* worthy of them’. The extremes constituting the relevant faults are conceit (having an unjustifiably high opinion of oneself) and undue humility, poorness of spirit, or pusillanimity.⁴ The magnanimous man is the perfect gentleman,⁵ much concerned with the honour that he so richly deserves, but only at the

¹ For Plato cf. the opening of the discussion of sophistry and the Sophist, *Soph.* 218 c: ‘We must begin with the Sophist, seeking and bringing to light in words *just what he is*. At present you and I have only the name between us. The reality to which each of us gives the name we may have privately in our own minds, but what we need is to have reached agreement about the thing itself through discussion, rather than agree without discussion on the name alone.’

² εὐπραΐεια (1108a14), included in the list of virtues from which self-control and αἰδώς are expressly banished!

³ The best available, as it is the literal translation of μεγαλοψυχία. The μεγαλοψυχός is literally ‘great-souled’, in Latin *magnanimus*. So Virgil calls the ancestral heroes of the Trojans (*Aen.* 6, 649), and cf. Cicero’s ‘*magnanimus et fortis vir*’ who is *constans, sedatus* and *gravis* (*Tusc.* 4, 28, 61). ‘Pride’ (Oxford trans.), unless qualified by ‘proper’, has acquired too many of the associations of the corresponding vice of χαυνότης.

⁴ The last word, used in the Penguin translation, gives A.’s μικροψυχία its appropriate Latin contrary to ‘magnanimity’. Though magnanimity is emphatically a virtue, these extremes are rather to be called errors than vices (1125b18–19).

⁵ He must have καλοκαγαθία (1124a4).

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hands of those worthy to confer it. Power, wealth and high birth assist magnanimity, but the magnanimous character is not over-elated by them or unduly cast down by their loss. He does not court danger, but will face it when necessary, knowing that under some conditions life is not worth living. He would rather confer than receive benefits and services, because that is the superior role. What he does receive he pays back with something over, turning his benefactor into a debtor. He dislikes making requests and is eager to help others, holds his head high among the great and wealthy but is gracious towards those of modest standing, since to show off before the humbly-placed is vulgar. Open in his loves and hates, he speaks his mind freely, holding the opinions of others in disdain. He does not nurse a grievance, choosing to overlook rather than remember injuries. He is the sort of man to have beautiful and useless rather than profitable and useful possessions, because they go more with self-sufficiency and independence. Finally comes the outward demeanour that goes with his imperturbable disposition. Haste and shrillness would ill become him, and he may be known by his slow step, deep voice and measured utterance.¹ It hardly needs to be said that Aristotle's 'magnanimous man' has come in for a great deal of criticism in modern times, but a few such characters (there would never be many) might be no bad thing in a city of excitable Greeks.

*Justice.*² The whole of book 5 is devoted to this central topic. 'Justice', we learn, is an ambiguous word. In one sense it covers the whole of virtue, for it is often equated with obedience to the law, and 'the law bids us live according to every virtue and refrain from all forms of wickedness' (1130a23-24). This is explained as cultivating whatever in a political community conduces to the general happiness and to good

¹ Gauthier in his book *Magnanimity* (1951) concluded that the magnanimous man was a man of contemplative excellence, and that some traits in the description refer to Socrates, who is in fact named at *An. Post.* 97b21 as an example of this virtue. Gauthier defended his view in his and Jolif's commentary against doubts expressed by Dirlmeier. (See Allan in *CR* 1962, 137, whom he has convinced.) It is difficult to see the *μεγαλόψυχος* as a dedicated philosopher, in spite of his possession of so many traits that A. admired. He is rather the ideal from the point of view of citizenship, of man as *πολιτικὸν ζῷον*.

² The sketch given here may be supplemented in various places, e.g. Stewart's notes to bk 5, Hardie, *A.'s Ethical Theory*, ch. 10, and the first part of Finley's article in *Articles on A.* 2, 142ff.

The virtues: justice

relations between individuals. In its universal sense of law-abidingness, therefore, justice coincides with virtue, but they are not in essence the same thing: virtue as such is a state of character, and justice is that state as manifested in our relations with others.¹

Having thus paid his respects to Plato, Aristotle lets his analytic instincts take control. Besides the generic justice, there is a specific sense in which it is only a part of virtue, and moreover this is the sort of justice that interests him. To be unjust in the sense is to act unfairly or dishonestly in pursuit of gain or advantage.² If one man commits adultery for gain, and another to gratify his passion and in spite of loss and punishment, the second one is not called unjust but licentious, and it is possible to exhibit any of the other vices apart from injustice in this narrower sense.

Thus it is plain that there is, besides universal injustice, another particular kind of injustice. It has the same name because both are in the same genus . . . Evidently there are several kinds of justice, including one which is different from virtue as a whole, and it is the essence and properties of this one which we have to grasp . . . So we may dismiss the justice and injustice that are defined in terms of the whole of virtue.³

Justice then, as a virtue among others, consists in acting fairly or impartially in a matter of division of material goods or other advantages. How does it conform to the pattern of a virtue as a mean between extremes? Not at all, say some. 'The attempt to exhibit justice as a mean breaks down.'⁴ Aristotle himself puts it like this (1133b30); 'Just dealing (δικαιοπραγία) is a mean between wronging and being wronged, i.e. having too much or too little. Justice is a kind of mean,

¹ This is quite clear, and there was no need for Hardie (*A.'s Ethical Theory*, 185f.) to find it obscure on the ground that most virtues are manifested in actions which affect others. When virtue, which has been defined as a state of character, manifests itself in actions towards our fellows, that is justice.

² 'Injustice is concerned with honour, money and personal safety – all three if we had a single word to embrace them all – and its motive is the pleasure that results from gain' (1130b1–4). How the pursuit of safety can be motivated by delight in gain is not stated, but elsewhere A. explains that 'gain' (κέρδος) is used loosely even where not strictly appropriate, e.g. of one who strikes a blow, as opposed to the 'loss' of him who is struck (1132a10–12). Chiefly, however, injustice in the narrow sense is exhibited in exchanges and financial transactions.

³ 1130a32–b1, b6–8, 18–20.

⁴ Ross, *Aristotle*, 214, agreeing with Jackson. This was denied in a long and careful note by Stewart (*Ethics* 1, 472–5), as later by Hardie (*A.'s Ethical Theory*, 183).

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not in the same way as the other virtues but because it is *of* a mean,¹ whereas injustice is of the extremes.² It would indeed be strange to censure a man as vicious for being unjustly treated,³ yet Newman wrote (*Politics* II, 391) that 'the main purpose of the Fifth Book is probably to show that Justice, like all other moral virtues, has to be with a mean – that it is ἀνέλογον and ὡς ὁ λόγος⁴ (the word for reason and proportion in Greek being the same), and that it has more kinds than one'. Aristotle sees at once that his first attempt at a definition in terms of the mean will not do. Just action is a mean between apportioning (whether in one's personal relations or as a judge between others) more or less than what is fair and appropriate. In the immediately following sentences he makes his meaning clear.⁴

And justice is that in virtue of which the just man is said to be a doer, by choice, of that which is just, and one who will distribute either between himself and another or between two others not so as to give more of what is desirable to himself and less to his neighbour (and conversely with what is harmful), but so as to give what is equal according to proportion; and similarly in distributing between two other persons. Injustice on the other hand is similarly related to the unjust, which is excess and defect, contrary to proportion, of the useful or hurtful. For which reason injustice is excess or defect, *viz.* because it is productive of excess and defect – in one's own case excess of what is in its own nature useful and defect of what is hurtful, while in the case of others it is as a whole like what it is in one's own case but proportion may be violated in either direction. In the unjust act to have too little is to be unjustly treated; to have too much is to act unjustly.

As with all virtues, the mean sought is not a simple arithmetical half-and-half affair, but one 'relative to us', which in this case Aristotle compares to geometrical progression (1131b12–13). He was no egalitarian. Political communities, as well as separate associations for exchange, are held together by reciprocity on a proportionate basis, not one of precise equality. Everyone agrees that just distribution must be according to worth, though [alas!] not on what constitutes worth.

¹ The above is a literal translation of the Greek ἐν μέσῳ ἔστιν 'relates to an intermediate amount' Ross, followed by Hardie; 'because it aims at a mean', Penguin trans.

² And one cannot be unjust to oneself, 1134b12–13 (and cf. ch. 9).

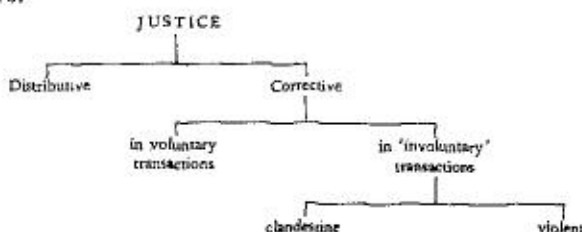
³ 'proportionate and according to reason'.

⁴ 1134a1–13, in Ross's translation.

The virtues: justice

'Democrats call it freedom, supporters of oligarchy wealth, others noble birth, and aristocrats virtue.'¹

Continuing his analysis, Aristotle distinguishes several varieties of justice (in his own, narrower sense), some of which may be represented as follows:



The respective provinces of distributive ('dianemetic') and corrective² ('diorthotic') justice are not very clearly defined. One might suppose that distributive justice ensured fair shares in the first place, and the function of the corrective sort was to restore the equilibrium if it had been disturbed, in the same field of human relations. They appear, however, to operate in different fields. Distributive justice is employed 'in distributions of honour, money or anything else that is desirable among fellow-members of the state' (1130b31-32). This would include payment for national service on juries or otherwise,³ distribution of land in colonies, public assistance; but also, apart from state payments, distributions of any funds held in common by clubs and societies such as existed at Athens for both political and social purposes, where justice consists in each member receiving benefits in proportion to the contribution which he had paid in.⁴ Corrective justice, on the other hand, concerns transactions including buying and selling (1130b33-31a1). 'Transactions', however, is given an oddly wide application, to include the 'involuntary' as well as the voluntary. Of voluntary transactions he mentions purchase and hire, loans,

¹ 1131a24-29. Aristotle uses aristocracy in its literal sense as 'rule of the best'.

² Not in the sense of punishment, as sometimes in English, but as the Greek word suggests, of restoring the balance when upset. (Ross called it 'remedial'.)

³ At Athens by the middle of the 5th cent. 'state pay for state service ... was available for some 20,000 citizens' (Hammond, *History*, 326, with details). On state pay in 4th cent. see *o.c.*, 531.

⁴ This is stated at 1131a29-31, and rules out the possibility of state payments in these cases. See Hardie, *A.'s Ethical Theory*, 190.

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pledges and deposits. 'Involuntary' means that one of the two parties has acted a passive and unwished-for part, and so brings in under transactions (συναλλάγματα) burglary, adultery, poisoning, bearing false witness (clandestine), and assault, confinement, murder, robbery with violence, abuse and insult (violent). This is the sort of justice with which the law is especially concerned, and it seeks to restore the balance arithmetically rather than geometrically, i.e. to make the compensation equivalent to the loss or injury, without regard to the relative merits of the parties concerned.¹

In the next chapter (5), Aristotle considers justice in the context of sale and exchange, which corresponds to distributive justice in one way, that it calls for proportionate rather than arithmetical equality. Its aim is to ensure a fair and equal exchange of goods, in the literal sense of determining how many pairs of shoes match a house in value. This is regulated by need (or demand), and gave rise to the use of money, both as a common standard of measurement and as a permanent resource acting as security for future exchanges: if A needs B's products when B has no need of A's, money resolves the difficulty.²

Aristotle proceeds (1134a24) to speak of what he called 'political justice',³ i.e. justice as between men as fellow-citizens, considered to be subject to the same laws and 'enjoying equality in respect of ruling and being ruled'.⁴ The use of law is founded on the belief that government should not be by a man – who might seek his own aggrandizement – but by a rational principle. 'The ruler (*archōn*) is the guardian of justice', and must have no more than his fair share, save in honour and precedence.⁵ Where the citizens are not sharing a life aimed at

¹ 1131b32–32a6. I do not quite understand how this squares with 1132b23–25, where A. says that simple retribution, the *lex talionis*, does not fit either distributive or diorthotic justice. It is not the same for one in office to strike a private individual as *vice versa*. 'Corrective justice', says Barker (*PTPA*, 343), 'covers the whole sphere of what we should call civil and criminal law.'

² For money see 1133a19–20, 28–31, 34b10–28, and relevant parts of Finley, 'A. and Economic Analysis', *Articles on A.* 2, 140–58.

³ In the *Politics*, justice as such is characterized as a political virtue: 'Justice (δικαιοσύνη) is something political, for adjudication (δίκη) is the ordering of political society, and justice is the judgement of what is just' (1253a37–39; cf. *EN* 1134a31).

⁴ A.'s opinion of democracy is not at present relevant but it certainly looks as if he is here regarding a form of it as the norm in political association. Cf. *Pol.* 1283b42–84a3.

⁵ The Athenian practice was of course to have *archontes* – a somewhat wider term than 'magistrates' or 'officials' – selected by lot from all the citizens (i.e. free males) for limited periods, and the law-courts similarly manned. In the *Ethics* A. takes Athenian institutions for granted, or

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independence, in freedom and the enjoyment of fair shares, either equal or in proportion, there is no justice but only its semblance.

The classification goes on relentlessly.¹ There is household justice, of which one learns that justice can be manifested more easily to a wife than to immature children or possessions (including slaves).² Then political justice itself is divided into 'natural' and 'legal' (ch. 7), where 'natural' does not mean the same as in 'natural virtue', *sc.* undeveloped or potential, but 'that which has the same force everywhere and does not depend on whether or not people think it just'. Legal or statutory justice refers to what is in principle indifferent, but valid by decree, and so varies with time and place, e.g. the price of ransom for a prisoner of war or the number and kind of victims in a sacrifice.³

There remains the role of equity,⁴ which is thus defined (1137b26-27): 'The nature of equity is to be a correction of the law, where law is wanting owing to its generality.' Law can only lay down general rules, which cannot cover all individual cases. A special ordinance may be necessary. This is recognized, and is not the fault of the law but in the nature of things. Equity is thus a form of justice, but superior to legal justice. But the best account of equity is in the *Rhetoric*, and is so striking, for its timeless relevance and its evidence for the humanity of Aristotle, that it is worth quoting in full. It needs no commentary. Here then is the Oxford translation (by Rhys Roberts) of 1374b4-22:

Equity must be applied to forgivable actions; and it must make us distinguish between criminal acts on the one hand, and errors of judgement, or misfortunes, on the other. (A 'misfortune' is an act, not due to moral badness, that has unexpected results: an 'error of judgement' is an act, also not due to

perhaps as Harrison and Finley have said, his treatment of justice there 'shows only a very general, one might perhaps say an academic, interest in the actual legal institutions of the Athens of his day'. (See Finley in *Articles on A.* 2, 143-9.)

¹ Even so, the *Rhet.* can offer yet another dichotomy of the just-and-unjust, namely that which is embodied in written laws and the unwritten; and the unwritten divides again into two species... (1374a18ff.; one of them is equity).

² Household management, including the marriage relationship, is fully discussed in the *Politics*, bk 1 chh. 3-13.

³ This particular division of justice is A.'s response to the Sophists' contention that it was not natural at all but entirely a matter of *nomos* (law, custom or convention; vol. III, 65f.).

⁴ The accepted translation of *epikeirotē* in this context. As A. himself says (1137a4-b2), it was also used as a general term of approval meaning 'goodness', and its cognate adjective 'good'. So in other parts of the *Ethics*, e.g. 1102b10, 322a, 67b5. On the various meanings of the word see also Stewart, *Ethics* 1, 539.

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moral badness, that has results that might have been expected: a 'criminal act' has results that might have been expected, but is due to moral badness, for that is the source of all actions inspired by our appetites.) Equity bids us be merciful to the weakness of human nature; to think less about the laws than about the man who framed them, and less about what he said than about what he meant; not to consider the actions of the accused so much as his intentions, nor this or that detail so much as the whole story; to ask not what a man is now but what he has always or usually been. It bids us remember the benefits rather than injuries, and benefits received rather than benefits conferred; to be patient when we are wronged; to prefer arbitration to litigation – for an arbitrator goes by the equity of the case, a judge by the strict law, and arbitration was invented with the express purpose of securing full power for equity.

Pleasure¹

Aristotle's remains contain three main discourses on pleasure, and a number of shorter observations. The discourses are in the *Ethics*, books 7 chh. 11–14 and 10 chh. 1–5, and *Rhetoric* 1, chh. 11–12. The last-named is the least important, and the definition of pleasure at the beginning as 'a motion of the *psychē*' suggests that he is still endorsing the Platonic view of pleasure as a perceptible process, which he later refuted.²

The importance of the subject can hardly be exaggerated, for in Aristotle's view as in Plato's, 'the concern of moral virtue is with pleasures and pains, for it is pleasure that makes us act badly and pain which keeps us from doing good' (1104a8–11). And a little later (1105a10–13): 'For this reason the whole business of ethics and politics is with pleasures and pains, for the man who treats them rightly will be

¹ Modern treatments include (besides general editions like Gauthier-Jolif) Festugière, *Aristote, le plaisir*; Lieberg, *Die Lehre von der Lust in den Ethiken des A.*; Urmson, *A. on Pleasure*; Hardie, *A.'s Ethical Theory*, ch. xiv. These and others are in Hardie's Bibliographical note at the end of his chapter, pp. 315f. Stewart's notes on the relevant parts of *EN* 7 and 10 are still most useful, especially for their plentiful supply of illustrative texts from elsewhere.

² Cf. vol. v, 228f., Plato *Rep.* 586d, *Phil.* 31d ff., 53c, 54c–d, *Tim.* 64d. (On 'perceptible' above (αἰσθητὰ), see Hardie, *A.'s Ethical Theory*, 301.) At one point in the *Ethics* A. seems to make only a minor refinement on it, when he says (1173b7–12) that it is confined to bodily pleasures and that pleasure itself is not a process of replenishment, although one may feel pleasure while the process is going on, and again in bk 7 (1152b34–35) the processes that restore us to our natural state are incidentally pleasant (pp. 378f. below). In bk 10, however, the distinction between κίνησις and ἐνέργεια rules out not only its identity with process (which is a κίνησις, *Rhet.* 1369b33) but the possibility that it should accompany a process.

good and he who treats them wrongly will be bad.' When the main discussions are taken with other remarks on pleasure, it appears as a Protean concept, or perhaps Aristotle would say a genus with widely different species, though these are nowhere classified in a series of dichotomies with the precision accorded to justice. The *obiter dicta* often show pleasure, without qualification, in a very bad light, as the 'seeming but unreal good' which leads so many astray. We have seen too that in aiming at the virtuous mean we must above all be on our guard against pleasure and its sweets, for we cannot judge them with an unbiassed mind.¹ A particularly strong condemnation comes in the first book (1095b14-22):

The vulgar who form the majority seem from the lives they lead to suppose (and they have their reasons) that goodness and happiness consist in pleasure, and therefore enjoy the apolaustic life. (There are, I may say, three main types of life – that one, the political and thirdly the contemplative.) The majority show themselves utterly slavish, choosing a life fit for cattle, but find justification in the fact that many of those in high places share the tastes of a Sardanapallus.²

One broad distinction is drawn as early as book 3, in connexion with the virtue of *sōphrosynē*, between pleasures of the body and those of the *psychē*. The latter cover such different pleasures as that which the ambitious man takes in honours and the studious in learning, and involve no affection of the body but rather of the mind. At this point (1117b31-32) Aristotle says that those who enjoy the latter sort are not called either licentious or temperate (*sōphrōn*), though in book 7 (1150a34-35) he remarks that 'the *sōphrōn* too has his pleasures, which is why he shuns the bodily sort'. In his condemnations of pleasure he obviously has the bodily sort in mind, though he does not say so,³ and at 1153b33-54a1 he confesses that 'bodily pleasures have usurped the general name because men most often make for them and they are shared by all. Through being the only familiar pleasures, they are

¹ P. 355 with n. 1 above.

² That this in fact refers only to a particular class of pleasures, the bodily, appears from bk 10, 1176b19-21, where he speaks of men in the seats of power who, lacking virtue and good sense and having never tasted pure and liberal pleasure, resort to the bodily kind: which, he adds, is no reason for supposing the latter more worthy of choice.

³ Thus in bk 1, at 1104a33-35, the *sōphrōn* simply shows 'pleasure' *tout court*.

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thought to be the only kind.' And they are, after all, 'necessary' pleasures (1147b25-28).¹

Aristotle may equally speak of pleasure as something good. To start again with a passage outside the main discussions, in the first book we meet 'the naturally pleasant', namely virtuous acts. 'The life of the virtuous has no need of pleasure as a sort of ornamental addition, but possesses its pleasure within itself.'² To pass contradictory verdicts on the same thing (or what goes by the same name), he resorts to a familiar device, that of dismissing the species of x of which one disapproves as not 'true' or 'genuine' x 's, though all the world may call them so. Thus in book 10, at 1176b24-26: 'As we have often maintained, those things are valuable and pleasant which are so to the good man', and a little earlier,

Pleasures must be those that appear so to the good man, and pleasant the things which he enjoys. If what he thinks distasteful another man finds pleasant, that is no matter for surprise, for there are many ways in which men are spoilt and corrupted; but such things are *not* pleasant, save to those in that state. Therefore the admittedly disgraceful pleasures are not to be called pleasures except to a perverted taste (1176a 18-24; cf. 1173b20-22).

Pleasure in book 7. Aristotle keeps faithfully to his stated order of procedure: first the 'things said', next a criticism of them, and thirdly his own views. The more philosophic theses, apart from the conviction of the majority that happiness involves pleasure, are three: (1) no pleasures are good (he is thinking of Speusippus); (2) some are good but most are not; and (3) even if all are good, the chief good cannot be pleasure. Arguments used include (i) every pleasure is a perceptible process towards a natural state, and no process is in the same class as its end: building is not a house; (ii) the temperate man (*sōphrōn*) avoids pleasures; (iii) similarly the *phronimos* seeks what is painless, not a

¹ The bodily pleasures are treated at more length in bk 7 ch. 13. Even 'bodily pleasures' is ambiguous, as Urmson has pointed out (Moravcsik's *Aristotle*, 331f.). Sometimes it covers pleasure in the activities of any of the senses, including seeing (say pictures) and hearing (music), which A. has no wish to condemn, sometimes only those of taste and touch (gastronomic and sexual pleasures). Cf. p. 367 n. 3. At 1175b36-76a3 'sight surpasses touch in purity, and hearing and smelling surpass taste. So their pleasures too are different, as those of thought are superior to them all.'

² 1099a11-16, and similarly bk 10, 1170a14-16.

Pleasure

positive pleasure; (iv) pleasures are a hindrance to thought (no one can pursue a train of thought while making love!); (v) there is no art (*technē*) of pleasure, but everything good is a product of art;¹ (vi) children and animals pursue pleasure; and (vii) at any rate not all pleasures are good, for some earn disgrace and reproach, and others are harmful to health.

Aristotle proceeds to show that none of the above considerations proves that pleasure is not good, or even the chief good. First, pleasures are not processes, nor do they always accompany processes. They are 'unimpeded activities of the natural state' and ends in themselves, which normally go not with the development of our powers but with their use when developed. If pleasure does accompany a process, e.g. of convalescence, this activity (experiencing pleasure) is performed by what is left of the organism's natural state. Activity, he adds, gets confused with process, but is in fact different.² Later (at 1154b17-20) he returns to the point, where he distinguishes between the naturally and the accidentally pleasant. 'By accidentally pleasant I mean the remedial, for cures are affected by the action of the part that remains healthy.³ That is why they appear pleasant. Naturally pleasant are whatever arouses the activity of the appropriate natural state.'⁴

That some pleasures are bad for health is irrelevant to the question whether pleasure as such is to be condemned. It is *alien* pleasures that hinder activity; the pleasures, e.g., of study and learning promote those activities. (He omits, as presumably obvious, that the pleasure of, e.g.,

¹ Burnet's derivation of this argument from Plato's *Gorgias* is doubtful, and others have declared its origin unknown. For the authorship of the other opinions and arguments see his notes.

² *ἐνέργεια* is not *γένησις* (or *κίνησις*), a basic and familiar Aristotelian tenet. Motion is *incomplete* actualization, the process of which *ἐνέργεια* is the outcome (*Phys.* 257b8 etc.; it can even be called *ἐνέργεια*, provided the qualification is inserted as at *Phys.* 201b31), and to understand A.'s philosophy it is more important to remember the rule than the apparent exceptions (e.g. *Rhet.* 1412a10). The text above is a paraphrase of 1152b33-36 and 1153a7-17. Stewart explains the chapter clearly and, I am sure, correctly, but A.'s point about 'activity of the unaffected condition in [the satisfaction of] the desires' sounds somewhat forced.

³ This has been well explained in the Penguin trans. thus: 'When a person suffers from a deficiency, only a part of his normal state is impaired, the rest remaining healthy. The process by which the affected part is restored to health is not really pleasant (medical treatment is often painful); or if pleasant at all, it is so only indirectly, because the activity of the healthy part is now unimpeded. It is upon activity that pleasure supervenes.'

⁴ 'E.g. music or contemplation stimulates a musical or contemplative nature', Tredennick in Penguin trans., 257 n. 1.

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drinking would interfere with them.)¹ That pain is an evil to be avoided Aristotle takes for granted (it is 'acknowledged', 1153b1), which is another argument for pleasure, as its contrary, being good. Nor does the existence of some bad pleasures exclude pleasure from being the best of all. After all, even some kinds of knowledge are worthless (a great concession from Aristotle). The conclusion may be unavoidable² that the unimpeded exercise of one or all of the faculties constitutes happiness and nothing is more valuable; *and the activity is pleasure*. If so, though many pleasures are worthless, *one must be the best thing of all*, and it is with good reason that everyone includes pleasure in the happy life, calling it a pleasant one. That too is why happiness demands the external advantages without which the activity will be impeded (pp. 341f. above).

The fact that all men as well as beasts pursue pleasure, even if not the same pleasure, is an indication that it is in a way³ the best thing of all. Aristotle adds oracularly: 'It may be that they are not pursuing the pleasure they claim to seek, but all of them the same one, for all things possess by nature something divine.'

Finally, through a defect in human nature, no one thing remains constantly pleasant to us, because we are mortal and complex. Anyone whose nature was simple would always find the same action the most pleasant, as it is with God, who enjoys his one changeless (lit. motionless) activity.⁴ The worse a man is, the more he hankers after change.

Pleasure in book 10. To those who have read the discussion of pleasure in book 7, it comes as a surprise when Aristotle begins book 10: 'Doubtless our next task is to deal with pleasure' and proceeds to devote

¹ (Cf. 1175b1-6: if an enthusiast for the flute hears someone beginning to play when he is in the middle of a discussion, his part in it will suffer because he enjoys the music more.) Yet A. says in the next sentence that even *theoria*, the highest intellectual activity and the exercise of our most divine faculty, can undermine health (1153a20). Evidently this was in his mind no bar to the thesis that only alien pleasures hinder an activity. At 1152b26-53a1 he offers the pleasures of *theoria* as an example of pleasures unaccompanied by pain or desire or any natural deficiency. For proper pleasures as promoting activity see bk 10, 1175a36ff.

² *ταῦτα δὲ καὶ ἀναγκαῖον*, 1153b9. Notice once again the tentativeness of A.'s conclusions on ethical matters, where certainty and accuracy have been declared impossible.

³ Or 'in one sense' or 'somehow' (πῶς).

⁴ For the motionless activity (*ἐνέργεια ἀκίνητος* here) of God, see ch. xiii (3), especially pp. 261f.

five chapters to it. The two treatments have much in common,¹ and the most natural supposition is that they comprise two lectures on pleasure, both included by a conscientious editor who did not want anything by the master to be lost.² It is generally supposed that book 7 presents the earlier version, and many scholars see them as inconsistent on one particular point, which they claim as evidence of a change of mind. I reserve this for the moment. (See pp. 382-4.)

After an introduction on the importance of training in the proper attitude to pleasures and pains, which is the basis of morality, Aristotle mentions here only two views: that pleasure is the good, and that no pleasure at all is good. For the first he cites Eudoxus by name, and for the second he no doubt had his Academic colleague Speusippus in mind.³ Eudoxus used the argument that all living creatures desire pleasure, and Aristotle agrees that this at least shows that it is good, simply because 'what everyone believes is true'.⁴ The opposite school argues (i) that if pain is bad, it does not follow that pleasure is good: bad things may be mutually contrary, and both contrary to what is neither;⁵ (ii) that pleasure is not good because it is not a quality.⁶ Aristotle simply replies that many good things, including virtue, are not

¹ For instance ch. 4 repeats and develops, with examples, the thesis that pleasure is not a process nor a movement, like building or walking from A to B, but is complete at any single moment.

² EN 7 is of course one of the books which EN and EE have in common. How this came about is an unsolved problem, but its treatment of pleasure may have belonged originally to the Eudemian version.

³ The arguments of Eudoxus and Speusippus, for which A. himself is our chief source, have been discussed in vol. v. See pp. 453-5 and 468f.

⁴ 1171b35-73a2. Cf. p. 91 above.

⁵ This refers to Speusippus, named in book 7 (1153b4-6), where A. claims to refute it. A.'s doctrine of vices as opposite extremes sounds like a perfect example of this (see especially 1108b8-10), but he would not of course say that what both are contrary to is neither good nor bad: it is the virtuous mean. It is true that according to scholia on A. (Speus. fr. 60d and e Lang) Speusippus said that painlessness - a state neither of pain nor of pleasure - was good. This was certainly the view of Plato, whose Socrates and Protarchus agree that it would be unfitting for the gods to feel either (*Phil.* 33b), but if the attribution of it to Speusippus involves the interpretation of 1173a8 given by Michael of Ephesus (ἡδονὴν γὰρ τὸ ἀγαθὸν εἶναι, Speus. fr. 60g), it is surely wrong. What is expressly said to be neither good nor bad can hardly be good. But the whole passage is somewhat obscure, and anyone interested in Speusippus should look at Schofield's account in *Mus. Helv.* 1971, 11-20.

⁶ I cannot explain the import of this argument. Stewart's reference to the need for permanence (II, 411) seems for once beside the point, and Burnet (444) offers little help - 'It appears that the Platonists (Speusippus) regarded all good things as qualities.' Indeed it does, but what on earth did they mean by it? 'We do not know precisely to what this refers', confesses Joachim. Cornford pencilled in his copy of Grant, '? It only means ἀγαθόν is an adjective, ἡδονή a substantive.'

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qualities; and (iii) that the good is determinate, whereas pleasure is indeterminate because it admits of degrees. Aristotle himself, like Plato, connects goodness with limit,¹ but, he claims, from the fact that one may be more or less pleased it does not follow that pleasure is completely indeterminate. One can be more or less virtuous or healthy, but the virtues and health are not on that account indeterminate. The variation itself may be within limits, 'up to a certain point',² which does not make the subject wholly indeterminate or 'unlimited' as Plato claimed.

The point on which books 7 and 10 are thought by some to disagree is that book 7 states uncompromisingly that pleasure and unimpeded activity (*energeia*) are identical,³ whereas in book 10, in G. E. L. Owen's words 'pleasures complete or perfect *energeiai*, but must not be identified with them'.⁴ For this he refers us to two passages, a long one, 1174b14-75b1, and a shorter one, 1175b32-35. I take first the latter, which offers the strongest evidence for separating activities and their pleasures.

Pleasures [as distinct from desires] are close to the activities, and inseparable from them, so much so that it is a moot point whether the activity is the same thing as the pleasure. On the other hand it does not look as if pleasure could be thought or sensation – that would be odd – but because they are inseparable some think they are the same.

In the longer passage referred to by Owen, the most striking and often-quoted sentence is that at 1174b31-33: 'Pleasure completes the activity, not as an internal state (*hexis*), but as a supervening end, like the bloom on the bodies of those in the prime of life.'

Aristotle uses similes and metaphors as ornaments. They are surprisingly frequent in his lectures (though we must not forget the *aureum flumen orationis* which Cicero discovered in his other works) and usually apt, and we may be thankful that he did not despise such dispellers of tedium; but ornaments for him they remain, not argu-

¹ For the connexion of goodness with τὸ ὁρισμένον (Aristotle) see 1170a20-21; with τὸ μέτροσφιμένον (Pythagoreans) 1106b29-30.

² ἕως τίνος, 1173a27. This is obviously aimed at Plato, *Phil.* 24e-25a.

³ τοῦτο ὁ ἴσθιν ἡδονή, 1153b12. But see p. 380 n. 2 above.

⁴ 'Aristotelian Pleasures' in *Articles on A.* 2, 92; similarly Stewart 11, 421; but for Stewart see also p. 383 n. 4 below. The latest discussion of the question is in Kenny's *Ethics*, 233-6.

ments.¹ Here in fact he goes on to say in the very next sentence that the pleasure is *within* the activity, which seems to cancel out the expression at 1175a5-6 that it 'attends on it' (ἐπεται). That pleasure is not a *hexis*, far from preventing it from being an integral part of the activity, is a necessary condition of its so being, for in the scale of potentiality and actuality the *hexis*, the finished state, is always one stage lower than the activity, and precedes it.² That pleasure completes and brings to perfection the activity is several times repeated.³ It follows that the activity is *incomplete* until performed with pleasure, and the parallel with nature and art at 75a23-25 seems to confirm the obvious meaning that the pleasure is integral to the *energeia*. So too at 1175a1, the pleasure is *in* the activity.⁴ Other expressions used are these. Pleasure completes life (regarded as an activity), and the question which is chosen for the sake of the other may be left aside. The two are inseparable: there is no pleasure without activity, and the pleasure completes the activity (1175a18-23). As activities differ in kind, so do the pleasures that complete them: some are good, some not.⁵ 'This appears from the way each pleasure is *adapted*⁶ to the activity which it completes.' At 75b13-15 another verb is used to describe the relationship between activity and pleasure. Activities are 'made precise by' the pleasures (Ross), 'concentrated by' (Penguin); perhaps 'brought to their climax', 'sharpened', or once again 'perfected'.⁷ To opt for one of these, the

¹ At 1139b18-19 he mentions the importance of 'speaking precisely and not relying on similarities', and his opinion of metaphor emerges at *Top.* 139b34-35; 'Anything expressed in metaphor is obscure.'

² See p. 218 above, and in the *Ethics*, 1098b33-99a3. Cf. bk 7, 1153a14: pleasure is not a *genesis*, but rather 'an *energeia* of the natural state'. All this is in happy accord with the definition of virtue in bk 2 as a *hexis* resulting in actions performed with pleasure. See p. 352 above.

³ τελειοὶ δὲ τὴν ἐνέργειαν ἡ ἡδονή, 1174b23; also 1175a15-16, 21. At lines 35-36 we have συναύζουσι δὲ οἱ ἡδοναὶ τὰ δὲ συναύζοντα οὐκεία. What augments is what *belongs*. By οὐκεία A. means, as he states at 1175b21-22, 'what goes with the activity essentially' (lit. 'in virtue of its [the activity's] own nature').

⁴ In spite of his remark on p. 421 (based like Owen's on 1175b32-35) that A. 'does not identify [pleasure] with ἐνέργεια', Stewart says, surely rightly, on p. 437, 'The ἀκωπώδιστος ἐνέργεια of VII is not, after all, very different from the τελειοὶ τὴν ἐνέργειαν ἡ ἡδονή of *E.N.* x.' Stewart's comments are still well worth reading. See in this connexion his vol. II, 219-23 and 437-41.

⁵ 1175a26-30, b24-28.

⁶ συναυάζουσι, a verb which literally means to be closely associated as kinsmen, but is commonly used more widely. For other instances in *EN* see 1162a2, 1172a20, 1178a15.

⁷ The verb is ἐξακριβόω from the adjective ἀκριβής meaning exact, accurate or precise. It is the word used by A. to describe the standard of accuracy to be demanded of the physical sciences, psychology and ontology, but not appropriate to, or attainable by, ethical studies (pp. 78f. above).

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sentence runs: 'The pleasure proper to activities sharpens, prolongs and improves them.' Here again the implication is that until it includes pleasure the activity is only roughly, approximately or imperfectly itself—in fact, as we have seen, incomplete.

In summing up the question, one should perhaps note the indication in the very first chapter of *EN* that in the present context of ethics, i.e. of practical living, the answer was of no great consequence to Aristotle. This accords with his general principle that ethics does not pretend to be a scientific study like psychology, physical science or ontology. With this caveat we must try to weigh up the various expressions, some intended literally, some less so, used by Aristotle in his effort to convey just how he conceives the relationship between an activity and its appropriate pleasure. The outcome must be that those which identify the activity and the pleasure, or more accurately depict pleasure as an essential part of the activity, so that the activity is incomplete without it, far outweigh those which suggest a more external relationship. I conclude that there is little or no cogent evidence for any substantial difference between the accounts in books 7 and 10 of the relationship of an activity to its appropriate pleasure, and much against it.¹

Friendship

The importance attached by Aristotle to friendship may be judged from the fact that the subject occupies two whole books of the *Ethics* (8 and 9). The encomia lavished on it are such as must have sprung from personal experience as well as dispassionate observation, and it is right to remember, as suggested earlier (pp. 37f.), his relations with men like Plato, Eudemus of Cyprus, Hermias, Alexander, Antipater and

¹ Doubtless mine will not be the last word on this controversial topic. Of other recent views I would particularly recommend, for its persuasiveness and clarity, that of Owen in *Articles on A. 2*. He is emphatic that the two accounts are irreconcilable, but that this is not due to any inconsistency or change of mind on A.'s part. It is rather that 'They are neither competing nor cooperating answers to one question, but answers to two quite different questions' (p. 93). Bk 7 'is engaged in a quite different sort of enquiry' from bk 10. It is the difference between asking what things or experiences are enjoyable and what enjoyment is. The answer to the first question can include bodily functions, but the second is concerned with 'the logic of enjoyment-verbs'.

Urmson may be making a similar point when he writes, more critically and in a somewhat forbidding sentence (Moravcsik, p. 330): 'What again we need is what Aristotle only half sees, a distinction between the pleasantness (welcomeness) and unpleasantness (unwelcomeness) of things, in particular feelings, which may be produced by or be otherwise concomitants of an activity and the pleasantness or unpleasantness of the activity itself.'

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Theophrastus, and the 'meed of friendship unsevered' at the end of the hymn to Virtue. Bereft of friends, no one would choose to live, though possessing all other good things. In wealth and power, as in poverty and misfortune, friends are indispensable. Friendship cements family relationships and holds the city-state together. To be solitary in the midst of plenty would be no one's choice because men are naturally gregarious, born for a life together. Those who say that fortune's favourites have no need of friends are the vulgar who think of friends in terms of usefulness or perhaps pleasure. Not needing friends of that sort, those fortunate in other respects are thought not to need friends at all, but this is untrue. Where men are friends, justice is unnecessary, but however just they be, they still need friendship.¹

The word *philia*, which we translate 'friendship', covers a wider field than its English counterpart. We can indeed ignore the cosmic significance assigned to it by some of the earlier natural philosophers, notably Empedocles, which Aristotle expressly excludes, confining his own discussion to human relationships.² But from what he says it is evident that in ordinary speech *philia* included any impulse towards association with another, which might be purely temporary and dependent on a belief that to cultivate his acquaintance would be useful or profitable to oneself. Its political significance is also more prominent than is usual in English: legislators are more concerned for *philia* (a spirit of co-operation) than for justice.³ With such considerations in mind Aristotle makes a preliminary division of friendships into three, according to their objects: goodness, utility or pleasure.⁴ He himself however would not admit that the last two deserve the name of friendship. They are only 'accidental' friendships, unstable and easily dissolved (1156a16-21).

Friendship, he says at the outset (1155a34), is a virtue 'or accompanied by virtue', perfect friendship being between two good men of equal virtue. It satisfies the definition of virtue in being a habit of

¹ The above remarks are from the introductory chapter 8.1, except one from 9.9, 1169b 17-19.

² 1155b1-10, where he mentions Heraclitus and Empedocles, and a poetic adaptation of the idea by Euripides.

³ *EN* 1155a22-24; cf. 27-30 and *Pol.* 1262b7-8.

⁴ 1155b18-19 in conjunction with 1162a34.

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rational choice (1157b28-31), and appeared in the list of virtuous middle states in book 2 as the mean between complaisance or undue eagerness to please (or, if exercised for gain, flattery)¹ on the one hand, and contentiousness or surliness on the other. That list however bears marks of having been hastily compiled *exempli gratia*, and obviously describes a characteristic ('being pleasant in the right way', 1108a27) more superficial than either the Greek *philia* or our 'friendship'; and it is modified in book 4 (26b11-27), where it is said that the virtuous mean between complaisance and contentiousness has no name. It most resembles friendship, but differs from it in that the man concerned is not acting from any feeling of affection but simply because he is that sort of man: he will display this character, in the appropriate manner of course, to strangers no less than to his intimate acquaintance.

Friendship being, properly speaking, a virtue, to appreciate Aristotle's conception of it we may ignore two of the three divisions in his first classification. More pertinent is a second enumeration of the recognized characteristics of a friend. Introduced as what 'they' or 'some' think, it nevertheless corresponds to Aristotle's own ideas of the essentials, which are as follows (1160a2-10). A friend wishes and does what is, or is believed by him to be, good for the sake of his friend, and even if they quarrel² wishes his friend to exist and live, again for the friend's sake. Others think of a friend as one who lives with his friend³ and has the same tastes, or who shares his friend's joys and sorrows. This leads to the curious comparison between friendship and a man's relationship to himself (1166a10-b1). That a friend should be 'another self', as Aristotle is fond of calling him,⁴ sounds like a simple metaphor for a high ideal of friendship, but he develops the comparison in unexpected detail. In all the features just mentioned, the relation of friendship corresponds point by point to that of a good man

¹ With a touch of psychological insight A. remarks that most men are partial to flatterers because most prefer being liked to liking others.

² I confess to some sympathy with the critic (Ramsauer) who wished to expunge καὶ τῶν φίλων οἱ προσκεκοιμημένοι at 1166a6 as a gloss, in spite of Stewart's defence. Its conjunction with the feelings of mothers for their children is singularly incongruous, and Burnet's mention of *Pol.* 1263a18, which refers to fellow-travellers, is hardly relevant.

³ In a later chapter (1170b11) 'living together' (τὸ συζῆναι) is said to involve sharing thoughts, not simply 'feeding in the same place like cattle'.

⁴ ἄλλος αὐτός 1160a32; ἑτερος αὐτός 1169b6-7, 1170b6.

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with himself. He is single-minded and whole-heartedly pursues the same ends; he wishes and does what is good, for his own sake; he wishes to live, since existence for him is good and pleasant;¹ he would not wish to change his identity for all the world; he is pleased to live with himself, for his memories are enjoyable and his hopes for the future good. Aristotle takes this opportunity also, somewhat suddenly and unexpectedly, without argument or apparent relevance to friendship, to mention the connexion between human excellence and intellectual activity which gets its full meed of attention in bk 10. The good man does good things for his own sake, 'for he does them for the sake of his intellect, which appears to be the man himself'. He wants to preserve himself, 'and especially that with which he thinks', and 'he has in his mind a store of objects of contemplation'.² He also agrees with himself in his joys and sorrows, 'meaning that he is consistently pleased and pained by the same things, not one thing now and something else later. He has, one might say, no regrets.'

Whether or not this justifies calling a man his own friend (we read with some relief), need not be settled now, but certainly the wicked provide a complete antithesis. They are at odds with themselves, as for instance the incontinent, whose appetites clash with their more reasonable wishes, and who choose harmful pleasures rather than what seems good, or through cowardice or laziness fail to do what they think best. There follows a vivid (and, I fear, somewhat unrealistic) picture of the misery and self-reproach of the wicked (1166b 11-29). Instead of embracing life, they shun it to the extent of suicide. They seek company to escape from themselves, for their memories and hopes are alike wretched. Without lovable qualities, they feel no love for themselves, nor are they at one with themselves in their joys and sorrows, for their souls are torn with faction, and drag them now this way now that. What they once enjoyed they now regret; in fact bad men are unhappy creatures, full of repentance. The moral follows: we must try to be good, 'for so one can show a friendly disposition towards oneself and be a friend to another'.

This answers the question whether self-love is to be commended

¹ 1166a19. Cf. 1170b 3-5, 14-15.

² 1167a17-27. Cf. bk 10, 1178a22.

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(bk 9 ch. 8). The term is commonly one of reproach, applied to seekers of wealth, honours and bodily pleasures, who gratify the irrational and passionate element in the soul. This is indeed the prevailing type of self-love; and nobody would attribute it to one who was outstandingly just, temperate or otherwise virtuous. Yet he may be thought the more self-loving, since he takes to himself the better part and in everything serves his real self, that is, his reason. Money and honours he will sacrifice for his friend's sake because by doing so he gains a greater good, nobility of character. It is right, then, to be a lover of self as the good man is, who appropriates the greater share of what is fine and praiseworthy, but not as most men are self-lovers.¹

To continue the requirements of true friendship: one should summon friends eagerly to share one's good fortune, but reluctantly to one's misfortunes, for trouble is last of all to be shared, whence the saying 'My own suffering is enough'. Summon them too if they can do you a great service at little inconvenience to themselves, and to *their* need come unasked and eagerly (1171b15-21). Aristotle also discusses what he calls 'a different species of friendship, friendship between unequals' (1158b11-12): fathers and sons, husbands and wives, householders and their slaves. Aristotle's description of the marriage-tie is not unsympathetic for its time. I quote it in Ross's translation (8.12, 1162a16-29):²

Between man and wife friendship seems to exist by nature; for man is naturally inclined to form couples – even more than to form cities, inasmuch as the household is earlier and more necessary than the city, and reproduction is more common to man with the animals. With the other animals the union extends only to this point, but human beings live together not only for the sake of reproduction but also for the various purposes of life; for from the start the functions are divided, and those of man and woman are different; so they help each other by throwing their peculiar gifts into the common stock. It is for these reasons that both utility and pleasure seem to be found in this kind of friendship. But this friendship may be based also on virtue, if the parties are good; for each has its own virtue and they will delight in the fact. And children seem to be a bond of union (which is the reason why

¹ 1169b1-2. In this context occurs the point about the good man laying down his life for his friends, already referred to on p. 343 above.

² More fully dealt with in *Politics* 1, where family relationships occupy most of the book.

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childless people part more easily); for children are a good common to both and what is common holds them together.

As for slaves, the useful little word *qua* brings some slight relief to our qualms. With a slave *qua* slave there can be no friendship, for a slave as such is just a living tool, and with such there is no common ground; but *qua* man there may be, for between persons who 'can share in law or in an agreement, there appears to exist some idea of justice', and also therefore of friendship' with a slave in so far as he is a man.²

Family relationships are characterized also in ch. 10 of book 8, where they follow a description of the various political systems, to which they are compared – rather artificially, it may seem to us, but with serious intent. It accords with Aristotle's principle that 'all forms of association are parts of the political, and particular kinds of friendship accompany particular communities' (1160a28–30). The relation of father to son corresponds to monarchy (as opposed to tyranny), the friendship between husband and wife should resemble aristocracy, 'for the husband's rule is founded on merit and covers the matters in which it is fitting for him to rule, whereas he hands over to the wife what befits her'.³ The relationship is oligarchic if either the man assumes authority for everything, not just the activities in which he is superior, or conversely (as sometimes happens) the wife rules because she is an heiress. In these circumstances, as in oligarchies, the basis of rule is not virtue but wealth and power. Brothers, unless the disparity in ages is too great, and their friendship correspond to timocracy (and not, as one might suppose, to democracy, whose domestic counterpart is a dwelling without a master!). The constitutions themselves belong, of course, to political theory, and we meet their classification again in the *Politics*. Their presence here in the *Ethics* illustrates once more Aristotle's conviction that ethics and politics are two aspects of the same subject, human relations, made explicit in the *Ethics* once again, as we have just

² For the connexion between friendship and justice see 59b25–31, 61a10–11.

³ 1161b3–8. Cf. *Pol.* 1255b12–14 and Barker's note there (*Pol.* p. 20 n. 1 *fin.*): 'We cannot but note that if the slave can be regarded as sharing in a system of law, he becomes a subject of rights, and ceases to be a mere object or "inanimate [*ψυχρὸν*? "animate"] instrument'.

⁴ Yet we are told in the *Politics* (1260a21) that a woman's virtues – her temperance, courage and sense of justice – are definitely subordinate to a man's. They are virtues of submission, his of authority.

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seen, at 1160a28-30. Similar passages occur in the *Politics*, e.g.: 'friendship is the greatest of goods for cities, for it preserves them from intestinal strife'.²

Climax: the happy philosopher³

So much for Aristotle's plunge into the problems and uncertainties of everyday social life. In the path of duty he has provided his fellow-men with a practical guide to conduct,³ despite the impossibility of precise knowledge or absolute rules on so fluid and unstable a subject. Nor has he excluded the political side (for the two are inseparable), but has nevertheless reserved its full treatment for a separate course. Here in the grand finale of book 10 (chh. 6-9), he at least gives free rein to his own inclinations. Now that the virtues, friendship and pleasure have all been dealt with (he says at the beginning of ch. 9), it remains to give an answer to the question raised at the beginning (where, significantly, the subject of the philosophic life was also postponed, 1096a4-5) and outline the true nature of happiness, the final goal of human life, also called the human good and provisionally defined as an activity of the soul according to virtue (p. 341 above). A brief reminder of what he has said about it already will, he thinks, shorten this final item. It is not a state but an activity, and one carried out and valued for its own sake as virtuous activities are, for happiness lacks nothing but is self-sufficient. Everything else is chosen for some further end. Happiness includes pleasure (p. 342 above), but pleasure is not any sort of amusement. The best judge of what is pleasant is the good man (p. 378 above), not some potentate and his court. Amusements are a form of relaxation, necessary (for no one can work continuously), but not an end in itself. A slave can enjoy amusements, but no one would call him *eudaimōn* (the word which I am inadequately translating 'happy').

If happiness is an activity according to virtue, it must be in accordance with the highest of virtues,⁴ that is, the virtue of humanity's best

² 1262b7-9; cf. *EN* 1155a22-23.

³ It is a much-debated question whether what A. says in bk 10 of *EN* on the nature of happiness and the best life for man is consistent with what he has said in bks 1 and 6. As I write, the latest contribution is Hardie's article 'A. on the Best Life for a Man' in *Philos.* 1979, in which he takes critical notice of the work of Ackrill, J. M. Cooper and S. R. L. Clark.

⁴ Cf. pp. 332f., 338f. above.

⁵ 1177a12-13. This is still recapitulation. Cf. 1098a17-18: 'If there are many virtues, then according to the best and most perfect of them.'

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part, and we, his readers, no longer need to be told what that is.¹ It is *nous*, the naturally ruling element which understands things good and divine and is 'either itself divine or the most divine thing in us', and its activity according to its own particular virtue is perfect happiness (1177a12-17). *Now this activity is philosophic thought.*² In the first book, three ways of life were distinguished, the apolaustic, the political and the intellectual or 'theoretic', and an examination of the last was promised for a later stage.³ When it comes as promised, it is no after-thought but the climax of the whole work. He takes back nothing that he has said before, indeed he repeats the most essential points. *Of course*, everyone has to have the necessities of life. *Of course*, being human, the philosopher will need physical well-being, for human nature cannot be sustained on thought alone: good health, food and other amenities are indispensable. *Of course*, in their relations with each other men must act in accordance with justice, courage and all the other virtues, making agreements, offering services and so forth, and must acquire *phronēsis*, practical good sense, for that and moral virtue are inseparable and mutually dependent. The philosopher himself, in so far as he is human and lives among other men, will choose to act morally.⁴

But now *audi alteram partem*. Granted that, as a man, the philosopher will need a certain minimum of possessions, yet for his own chosen activity they are unnecessary and may even prove a hindrance. Sufficiency does not mean excess, and to display excellence 'one need not be lord of land and sea' (1179a1-5). *In fact the life of the intellect*, as it contemplates knowledge gained and seeks for more, fulfils all the conditions thought necessary for happiness. It is the most independent, for not even colleagues are necessary, though they may be helpful. It can be practised for longer continuous periods than practical action, and unlike practical action it is its own end. It provides the purest and most lasting of pleasures, and it is only reasonable that the

¹ A. here touches briefly (cf. 1178a22-23) on matters which receive their full treatment in *De an.* bk 3 (ch. xiv, 6 above). The cautious expression εἴτε δὴ νοῦς τοῦτο εἴτε ἄλλο τι (1177a13-14) need not disturb us, for by line 20 it has become νοῦς *sans phrase*.

² It is θεωρητική, the adjective from the noun θεωρία, the disinterested pursuit of knowledge for its own sake. On the meaning of *theoria* see additional note on pp. 396-8 below.

³ 1095b17-18, 1096a4-5.

⁴ See especially 77a28ff., 78a10-19, 78b5-7, 33-35.

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life of those who have attained knowledge should be pleasanter than that of those still seeking it.¹ Moreover happiness lies in leisure (*scholē*).² The purpose of being busy is to win leisure, as the purpose of war is to regain peace. Political activity looks to an end beyond itself, either to power and honours or at best to the happiness of the statesman himself and his fellow-citizens; but in itself it is unleisured. Only the philosophic life contains its end within itself and enjoys *scholē*.

At 1177b19-26 he sums up: the activity of *nous*, pure thought, has its end in itself and its own intrinsic pleasure (which, he reminds, augments the activity), is self-sufficient, leisured, as free from fatigue as is humanly possible. In short, granted sufficient length of life, it represents perfect happiness. Seen thus in a nutshell, the sheer bliss of the philosophic life raises in Aristotle's mind a typically Hellenic doubt (or fear of such doubt on the part of hearers and readers). Do not the poets and sages warn of the *hybris* of aiming too high, and the *nemesis* which follows it?³ So we get a memorable, and superficially inconsistent, passage.

1177b26-78a8. But such a life would be too high for man, for it is not in so far as he is human that a man will live like this, but in so far as he has a spark of divinity in him,⁴ and just as that divinity differs from the concrete whole (τοῦ συνθέτου), so will its activity differ from the activity of the rest of virtue. If *nous* is divine, then, in comparison with man, the life according to it will be divine in comparison with human life.

Nevertheless we must not follow those who advise us that he who is a man should think like a man, mortals the thoughts befitting mortals. No, we must

¹ On this point also see additional note on pp. 396-8 below.

² The Greek word *scholē*, primarily 'leisure', is of wider meaning than its English counterpart, and its use explains how we have derived from it such words as 'school' and 'scholarship'. At *Pol.* 1323b39 (τίπotes γὰρ ἐστιν ἔργον σχολῆς) it definitely means a branch of study. Also in the *Politics* (1337b33ff.) A. gives a little disquisition on the use of leisure, beginning 'Leisure is more to be chosen than being busy, of which it is the end and aim, but we must enquire how we are to spend our leisure - certainly not in play.' 1329a1-2 ('*Scholē* is necessary both for the development of virtue and for the performance of political duties') is A.'s apologia for forbidding citizens to engage in banal occupations like trade and agriculture.

³ Examples of this commonplace of classical Greek literature are Pindar *Pyth.* 3, 59-62, *Isthm.* 5, 14-16; Soph. *Trach.* 473 and fr. 531 Nauck; Eur. *Bacch.* 395f.

⁴ So far this is a Platonic legacy. Cf. Plato *Phil.* 33 b 'It is nothing surprising that this [*sc.* the life of reason and thought] should be the most divine of all lives.'

do all we can to make ourselves immortal,¹ all we can to live according to the best in us. However small in bulk,² in power and worth it far exceeds all. As the ruling and better part, it would seem to be each man, and it would be strange to choose not one's own life but the life of something else.³ What we said earlier⁴ will be found relevant now: for every single being, whatever naturally belongs to it is best and most pleasant for it. Since then *now* more than anything is the man, this applies to the life of the intellect, and the man who leads it is happiest. Life according to the rest of virtue is secondary, for its activities are [merely] human.

That is how it is. In the same breath Aristotle can speak of the life of intellectual activity as 'too high for man', 'divine in comparison with human life', and exhort us to pursue it as the life which is in the fullest sense man's own. Man of course, like everything else in the physical world, is a compound of matter (substratum) and form, a *syntheton* (p. 103 above); and it is the form which gives a *syntheton* its specific character and differentiates it from things of another kind, constituting in fact its essence or substance (*ousia*).⁵ But what we have just read, expressing a double way of looking at the function of man, means that he is a *syntheton* in a different sense from the rest of nature. It may be difficult at this distance to grasp Aristotle's inmost thoughts about the nature of *nous*, but we shall misunderstand them more than we need if we fail to appreciate this remarkable development of the doctrine of matter and form in the upper strata of nature. Whereas the distinctive mark of humanity is entirely lacking in the lower beings, the best in man, which is in the fullest sense his proper nature, is identical (I use the word in full consciousness of its meaning)⁶ with the nature of God.

¹ ἐπ' ὅσον ἐνδέχεται ἀθανάτισεν. So Plato spoke of ἀπολαύς θεῶν as the ideal, but there is a notable difference between the two, pointed out by Grant (*Ethics* 1, 215). For Plato, 'assimilation to God' consisted in becoming 'just and holy' (*Th.* 176 b), whereas for A. the practice of justice and the other virtues is something 'petty and unworthy of gods' (1178b 10-18).

² A. was not above a rhetorical trope. Being incorporeal it has of course no bulk (ὄγκος) at all. At *Met.* 1073 a 5-6 it is demonstrated that God, who is pure νοῦς, can have no magnitude.

³ Cf. 1097b 34 ζητῶνται δὲ τὸ ἴδιον.

⁴ 1156b 15-16, 1169b 33.

⁵ This is developed in ch. xi on substance, especially pp. 215-16.

⁶ Conscious also that it goes against Allan (*Phil. of A.*, 83) and Ross, who have, I think, gone astray in this matter. In his edition of the *Metaphysics* (1, cli) Ross complained that the dependence of A.'s theology on his peculiar physical theory led him to think of God 'not as operative with equal directness in all change and being, but as directly operative only at the outermost confines of the Universe and as affecting human affairs only through a long series of intermediaries'. This may be true of God as πρῶτον ἀσπρόν of the physical world, but not as πρῶτον νοητόν, in whom νοῦς, and νοητόν are the same. Alone of sublunary creatures man, as himself endowed with νοῦς, has as it were a direct line to God.

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To deny this would be to distort both the letter and the spirit of what Aristotle says. The life of God is 'like the best which we enjoy for a brief spell'. *Nous* is shared by man with 'whatever may be similar or superior'.¹ An animal performs its proper function (*ergon*) by realizing, activating and perpetuating its own specific form. It cannot and should not do more. I have tried to explain (pp. 267f.), by Aristotle's simile of the household and my own attempt at an analogy in the organization of a ship, how that was consistent with an all-embracing unity of purpose. The functions of cook and engineer, regarded on their own level, appear to have nothing in common, but the whole ship is moving to one port, and will not get there if either neglects his own job. Things will certainly not be improved if they try to usurp the functions of the captain.

And so Aristotle would say of a cow, as he says of man, that its *ergon* is to live according to the highest that is in it ($\zeta\eta\nu\ \kappa\alpha\tau\grave{\alpha}\ \tau\acute{o}\ \kappa\rho\acute{\alpha}\tau\iota\sigma\tau\omicron\nu\ \tau\acute{\omega}\nu\ \epsilon\nu\ \alpha\nu\tau\eta\grave{\iota}$), but he would not say, nor should we expect him to, that this means to become as human as possible (as it were, $\epsilon\phi'\acute{o}\sigma\omicron\nu\ \epsilon\nu\delta\epsilon\chi\epsilon\tau\alpha\iota\ \alpha\nu\theta\rho\omega\pi\iota\zeta\epsilon\iota\nu$). Although it shares some faculties with man (growth, reproduction, sensation), his best and most characteristic function is totally lacking to it. The relations between men and God are different.² Men are clogged with matter, they have imperfections and hindrances from which the untroubled perfection of God is free. Therefore they cannot exercise without interruption the highest that is in them. But not even the Supreme Being possesses a faculty lacking in man, as man possesses one denied to the lower orders of nature.

All this is confirmed by (and itself confirms) Aristotle's dicta on *nous* elsewhere. Here in the *Ethics* (1178a 22) he says that the virtues of the *syntheton* are human, and so therefore are the life and the happiness that they bring, but *nous* has its separate ($\kappa\epsilon\chi\omega\rho\iota\sigma\mu\acute{\epsilon}\nu\eta$) happiness, a thing apart. This brief note, he adds, must suffice for the present purpose. He knows he has developed the theme elsewhere, and a

¹ *Met.* 1072b 4 (for a translation in context see p. 254 above), *De an.* 414b 19-20.

² Man's kinship with the divine was not of course an original idea of A.'s though he had his own grounds for it. It was the basis of the mystery-religions, and Plato makes even Protagoras say that $\delta\ \alpha\nu\theta\rho\omega\pi\omicron\varsigma\ \theta\epsilon\iota\acute{\alpha}\varsigma\ \mu\iota\tau\epsilon\sigma\chi\epsilon\iota\ \mu\iota\sigma\tau\epsilon\iota\varsigma$ and practises religion $\delta\iota\alpha\ \tau\eta\nu\ \tau\omicron\upsilon\ \theta\epsilon\omicron\upsilon\ \sigma\upsilon\gamma\gamma\epsilon\iota\sigma\iota\alpha\nu$ (*Prot.* 322a).

reminder may not be superfluous here. The *psychē* in general (life and its faculties), being the form or actuality of the body, is inseparable from it (pp. 282f. above), but *nous*, the faculty of pure thought,¹ 'appears to be a different kind of *psychē*, which alone can be separated as the eternal from the perishable'. So he speaks in a psychological treatise, and in his work on animal generation we found: 'It remains that *nous* alone comes from outside and is alone divine, for no bodily activity has any part in the activity of *nous*.'²

Readers must decide for themselves how what is said about *nous* here and in the *Ethics* fits in with the proposed identification of the Creative Reason in *De anima* 3 with the divine First Cause of all (pp. 322-7 above). Here in a practical manual concerned with the human good and human happiness Aristotle has deliberately avoided (1178a 22-23) such matters of theoretical psychology. It may be that the division of reason into an active and a passive element occurred to him at a later stage of his thought; his notes about it in the *De anima* are sketchy to say the least. But I do not see anything here incompatible with the idea that human *nous* is a faculty or capacity (*dynamis*) activated, like everything else in the world, by the attraction of the First Unmoved Mover who, unlike mankind, is intellect pure, simple and tireless.

In connexion with the life of reason Aristotle has already spoken of 'the gods' in a way calculated to appeal to the ordinary Greek polytheist, and he ends with another appeal to religion of a sort to reinforce one's impression that the *Ethics* is an at least semi-popular work, an attempt to reconcile philosophy with the outlook of the man in the agora. At 1178b 8ff. he argued, as part of his case that intellectual activity is the best for man, that we think of the gods as happy and blessed and at the same time it would be ridiculous to ascribe to them any form of practical activity based on one or other of the moral virtues. No activity save that of contemplation is worthy of them (1178b 10-22). Then as a finale to the whole subject he claims that the man who cultivates and uses his intellect is not only in the best condition but is the favourite of heaven.

¹ Arising in the first place from the exclusively human ability to generalize from individual perceptions. See pp. 183, 304f., 313 above, and for the relationship of sensation to thought in the *Ethics*, 1143b 5, pp. 192f.

² *De an.* 413b 25-27, *GA* 736b 27-29.

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1179a24-32. If the gods have, as they are thought to have, any care for human affairs, it would be reasonable that they should take pleasure in what is best and most closely akin to them, which is *nous*, and require with benefits those who care for it and hold it in honour, as acting rightly and well in cherishing the things they themselves hold dear. Clearly all this applies most of all to the man of wisdom.¹ He therefore is dearest to the gods, and he whom the gods love is likely to be happiest. In this way too, then, the wise man will be the happiest.

ADDITIONAL NOTE: THE MEANING OF 'THEORIA'

At 1177a25-27 Aristotle says: 'Philosophy [φιλοσοφία, not σοφία] is believed to hold pleasures wonderful for their purity and steadfastness, and it is reasonable that the life of those who know should hold more pleasure than that of those who seek.' *Theoria* (θεωρία, commonly translated 'contemplation', p. 260 n. 7 above) is the name of the activity singled out in *EN* 10 as the highest good for man and the acme of his happiness, so it is important to know what it meant. There is a recent tendency to exclude scientific and philosophical enquiry from it, limiting its scope to the contemplation of truth already acquired. Those who do so rely, so far as I can see, solely on the sentence from the *Ethics* just quoted, and it is always dangerous with Aristotle to pin one's faith on a sentence without looking at it in the light of his more general usage, which may provide weighty evidence against it. To illustrate the tendency I mean, Jonathan Barnes has written (*Penguin Ethics*, 38):

Aristotelian contemplation is not, as we might be tempted to imagine, an exercise in discursive reasoning, it is not a matter of intellectual questing or research; it is not a matter of moving by logical inference from known premisses to hitherto unknown conclusions. As an argument for the thesis that the contemplator enjoys himself, Aristotle observes that those who know have a more pleasant life than those who search (1177a26); evidently, then, contemplators are not seekers after wisdom but possessors of it... The Aristotelian contemplator is a man who has already acquired knowledge.

Earlier, Ross had written, referring to the same sentence in the *Ethics* (*Aristotle*, 234): 'The happy life is not one of search for truth but of contemplation of truth already attained.' Again, Hardie in Moravcsik's *Aristotle*

¹ Here and 2 lines below the word is σοφός, perhaps best translated, as by Ross, as 'the philosopher'. He is the man of theoretical wisdom, as distinct from the *phronimos*, the man of good judgement in practical affairs.

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(p. 309) claims that Aristotle is producing 'a startling paradox', and quotes Gauthier and Jolif in support of the assertion that he here 'excludes discovery from the contemplative life'. But perhaps one may quote Hardie against himself. In another book and an entirely different connexion he has written: 'But to say that the completion of the task is desired for its own sake is not to say that the activity of completing it is not also desired for its own sake' (*A.'s Ethical Theory*, 306). The modern scientific researcher would confirm this. Obviously the pleasure in research depends on the hope that it will lead to further discoveries in the inexhaustible field of knowledge, and he rejoices in each little advance as he makes it; but the pleasure would vanish no less in the inconceivable event of there being no more realms to conquer.

As for Aristotle, though man's *nous* makes him partly divine, and it is dedicated to the search for truth, he is not wholly absorbed in the godhead, and if θεωρία meant the contemplation of all knowledge, he could never practise it. Nor would Aristotle approve of his resting on his oars to contemplate such knowledge as he has already achieved. In fact, however, 'contemplation' in that sense is a travesty of the word θεωρία. A few examples of its use and that of its cognate will confirm the statement of Bonitz (*Index*, 329a46-48) that it 'ipsam contemplandi atque investigandi rationem significat'. He points out that it is used interchangeably with σκέψις, and one may compare the equivalence of θεωρεῖν and σκοπεῖν at *Met.* 1061a 35-36.

One might wonder in the first place how it could be better to have fellow-workers (συνεργούς 1177a34) in the contemplation of already acquired knowledge. Positive evidence is provided by the division of the whole field of knowledge into practical, productive and theoretical, in which natural science is included among the theoretical, meaning only that it is pursued from no other motive than to acquire knowledge for its own sake.¹ The natural scientist is ὁ περὶ φύσεως θεωρητικὸς (*PA* 642a29; 'the inquirer into nature', Ogle).² So at *Met.* 993b20-23, the difference between theoretical and practical science is that the one aims at truth, the other at action; and so little is he concerned, as we well know,³ for niceties of terminology when understanding is not at risk, that in the next clause θεωροῦσθαι is said of

¹ *Met.* 1025b18-24, pp. 131-2 above, and cf. *EN* 1178b20-21, 1139a27-28. This goes against Gauthier's limitation of θεωρία to first philosophy, and there is something in Allan's comment that 'Aristotle may have believed in a graded scale of forms of θεωρία. The word is an elastic one.' (See *CR* 1962, 138.)

² Barnes gives an interesting account of what the 'contemplator' does, but his sole example, the geometer, is perhaps easier to relate to it than would be the workers in other theoretical sciences.

³ E.g. pp. 105 n. 1, 121 n. 1, 193 n. 2, 309 with n. 2, 347 n. 1.

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practical thinkers themselves, though their θεωρία is for an immediate purpose. Like σχολή (p. 392 n. 2 above), θεωρία can mean a particular branch of study, as in 'these matters are the concern (ἔργον) of a different θεωρία' (GC 334a15; cf. PA 641b2-3), or its treatment in writing, a treatise (HA 589a20 'as was said in the θεωρία on plants').

Primarily θεωρεῖν meant 'to see' or 'observe', as at Hdt. 4.76.1 (of Anacharsis) γῆν πολλὴν θεωρήσας. θεά was a spectacle and θεωρός (among other things) a spectator. So too in Aristotle for θεωρία and θεωρεῖν 'observation' and 'observe' would sometimes be a better translation than 'contemplation' and 'contemplate', as at EN 1169b33-34 θεωρεῖν δὲ μᾶλλον τοὺς πᾶσι δυνάμεθα ἢ ἑαυτοὺς: 'It is easier to observe ['contemplate'] would hardly sound natural, I think] our neighbours than ourselves.'

For these reasons I believe Joachim conveyed the right impression in the following paragraph of his *Nic. Eth.* (pp. 2f.).

Man's attitude of mind is contemplation (θεωρία), the formed habit of thinking which gets established in him is theoretical science (θεωρητικὴ ἐπιστήμη), and the thought which is at work in him is theoretical reason (δianoia θεωρητική).¹ All theoretical or speculative inquiries – all sciences as we use the term – fall under the head of 'theoretical sciences'. The 'scientific man', in this restricted sense of the term, is entirely concerned with knowing or understanding. He plays the part of a spectator of what *is* – and *is* independently of him. He neither desires, nor is able, to alter the truth of things . . . When the objects of his study are subject to change – when, for example, he is investigating natural phenomena – he tries to *watch* the process, not to modify it, except in so far as experimental modification helps him to understand.

Conclusion

In the last few pages of the treatise Aristotle brings us down from the heights of philosophy through yet another reminder that the business of ethical enquiry is not with observation and knowledge but with ensuring better behaviour in society. Where virtue is concerned, it is not enough to know what it is: one must possess and use it. Not surprisingly therefore, much of the last chapter is a repetition of points made previously by Aristotle himself or already dealt with here because they fitted in with earlier books. Such are the practical aims of ethics

¹ Joachim's editor D. A. Rees refers here to *Met.* 1025b25 and *EN* 1139a27.

Conclusion

(*phronēsis* is not knowledge);¹ the importance, for inculcating good habits, of parental upbringing and good laws, including a system of punishments for the majority who are not amenable to reason or persuasion; and the necessity for a good natural disposition as well if the corrupting influence of the passions is to be overcome. The part played by legislation in fostering morality is enlarged on (we are, after all, leading up to the *Politics*), but has been introduced already in books 2 (1103b2–6) and 5 (1130b22–26).

Book 10 adds an interesting comparison between the merits of state and private (i.e. home) education,² on which Aristotle's mind seems divided (1180a14ff.). He first says that a parent has not the disciplinary power of the law which is necessary to ensure obedience. Moreover an individual who thwarts one's impulses, however rightly, arouses dislike, whereas the ordinances of the law are not resented. Only if the community neglects its duty is it right for each man to assist his children and friends towards virtue. Even so, he could do this best by becoming a legislator himself. Nevertheless, he continues (1180b3), in a household the father's word and example can effect what laws and custom do in the state, and even better (καὶ ἐτι μᾶλλον) in view of the bonds of kinship and gratitude, giving the children a natural affection and inclination to obey. Moreover, in the home each can be treated according to his individual needs, whereas the law can only deal in generalities.³ In this way a layman has a part to play, but in general what counts is the work of the expert or technician, the man who has grasped the universal rule behind the individual case. Therefore whoever wishes to make men good, whether many or few, should learn to legislate, and we have next to consider (i.e. in the *Politics*) how this art can be acquired. Unfortunately, whereas with other pursuits – music, say, or painting – the same people practise as teach them, the skill of statesmen and legislators seems to come solely from natural ability and experience. They never write or speak about their art (though it might

¹ Bk 6, 1142a23–24, pp. 346f. above. Also for this paragraph see pp. 345f., 363.

² 1180a14ff. *παιδεία* is a word used for education in general, though here A. is evidently thinking primarily of moral training. For his views on education one must look to the *Politics*, bk 8 of which is entirely devoted to it. There he leaves no doubt that it is the business of the state.

³ Cf. 1137b25, pp. 373f. above.

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be a better occupation for them than haranguing the Assembly or law-courts! 1181a4-5), or make statesmen of their sons or friends.¹ Instruction is left to the Sophists, who are in reality quite incapable of it, neither statesmen themselves nor with a proper understanding of what statesmanship is about. The field is clear for Aristotle.²

¹ Cf. Plato, *Prot.* 319d-320b.

² Something has been said on pp. 331-5 above about the relations between ethics and politics in A. and the transition from the *Nicomachean Ethics* to the *Politics*.

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